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THE SOUTHERN MEDICAL JOURNAL

JOURNAL OF THE SOUTHERN MEDICAL ASSOCIATION

INCORPORATING THE GULF STATES JOURNAL OF MEDICINE AND SURGERY AND MOBILE MEDICAL AND SURGICAL JOURNAL

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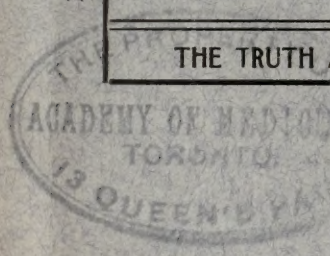

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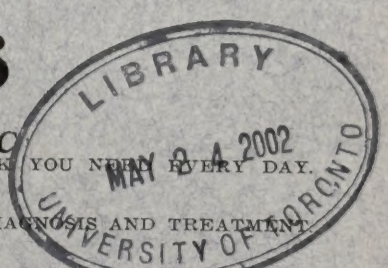

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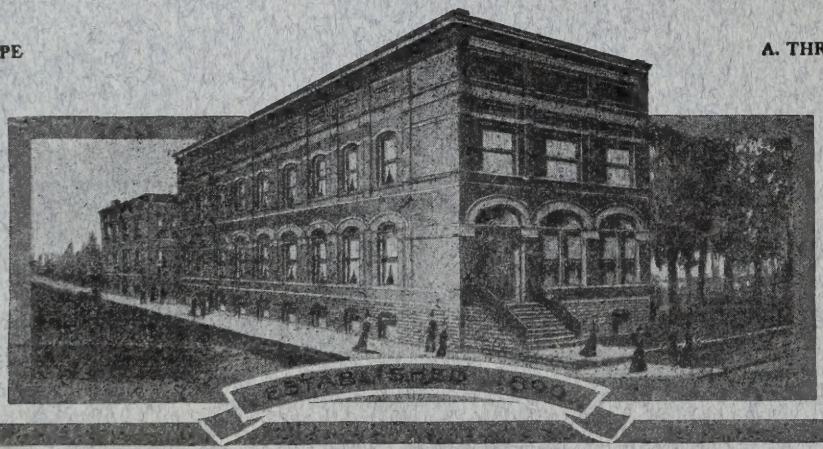

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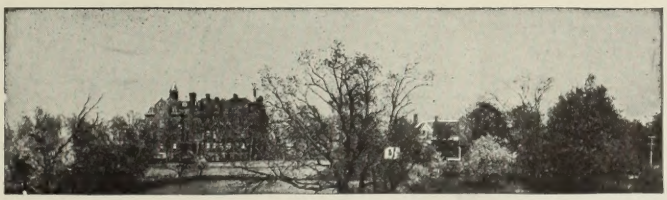

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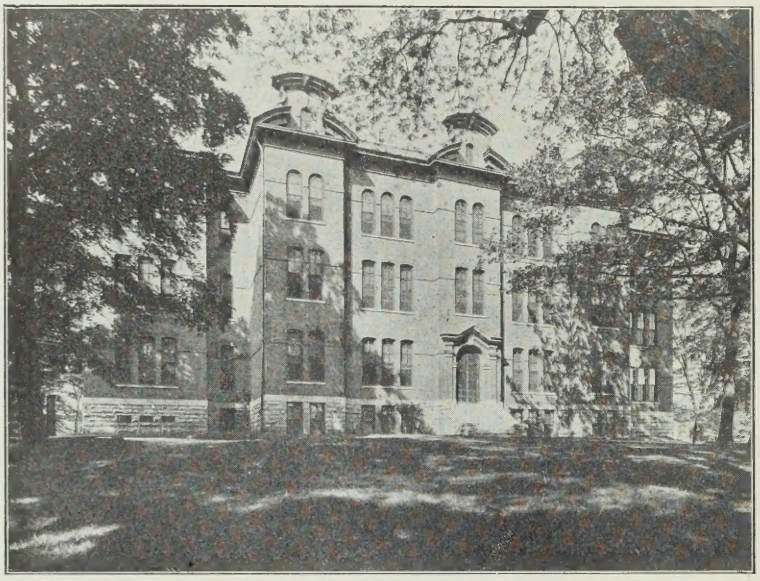

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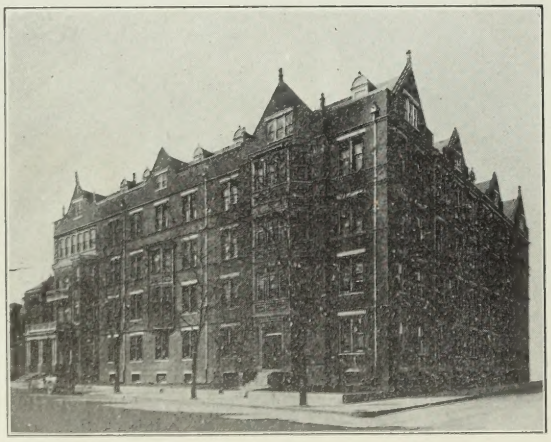

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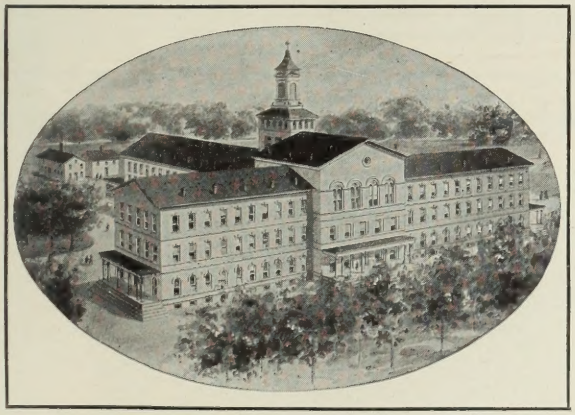

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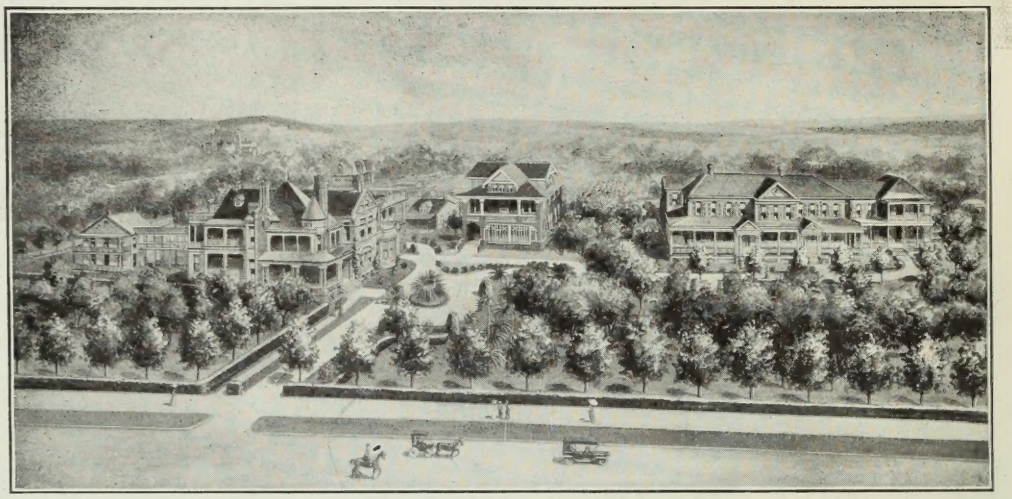

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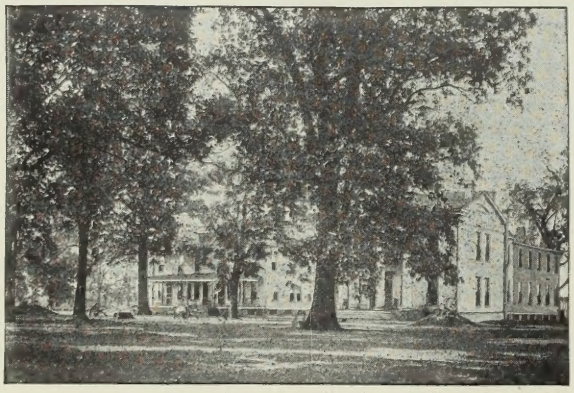

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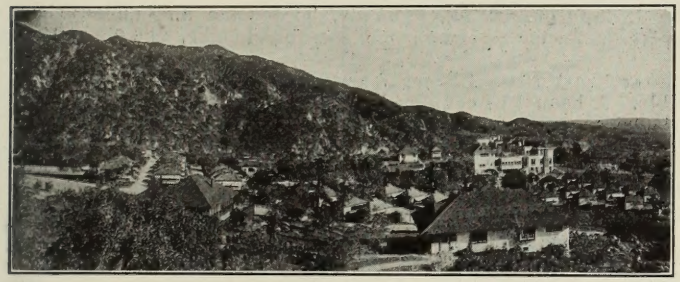

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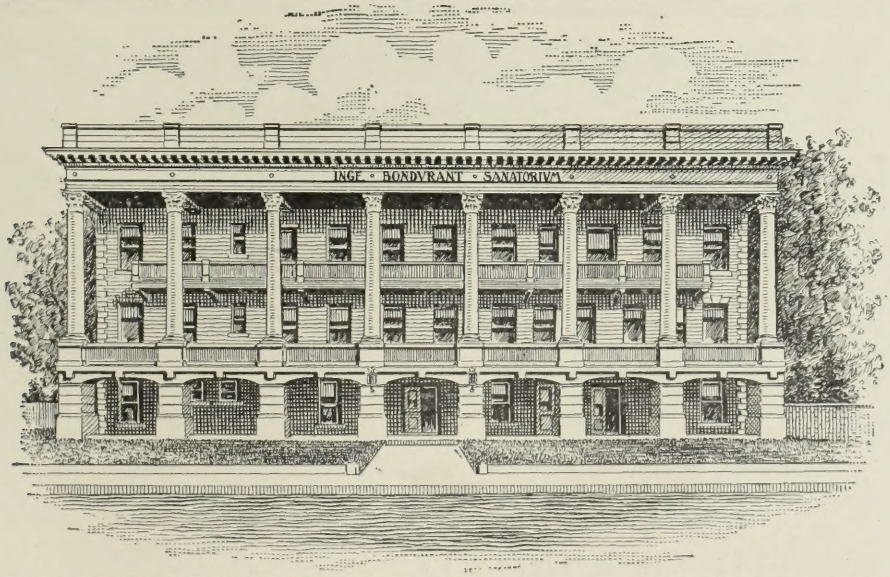

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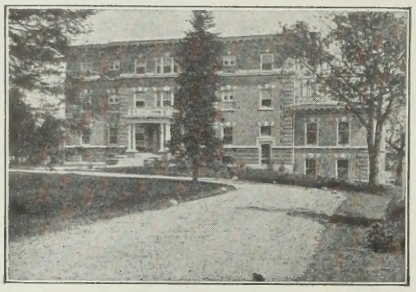

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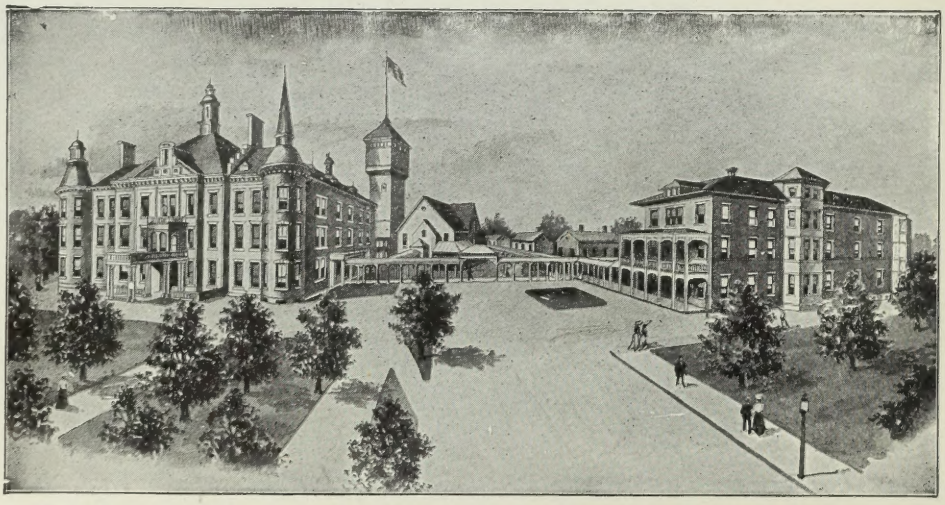

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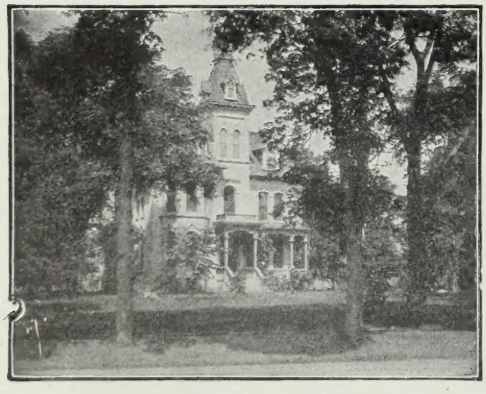

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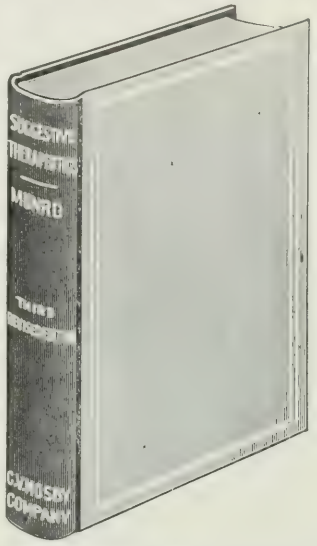

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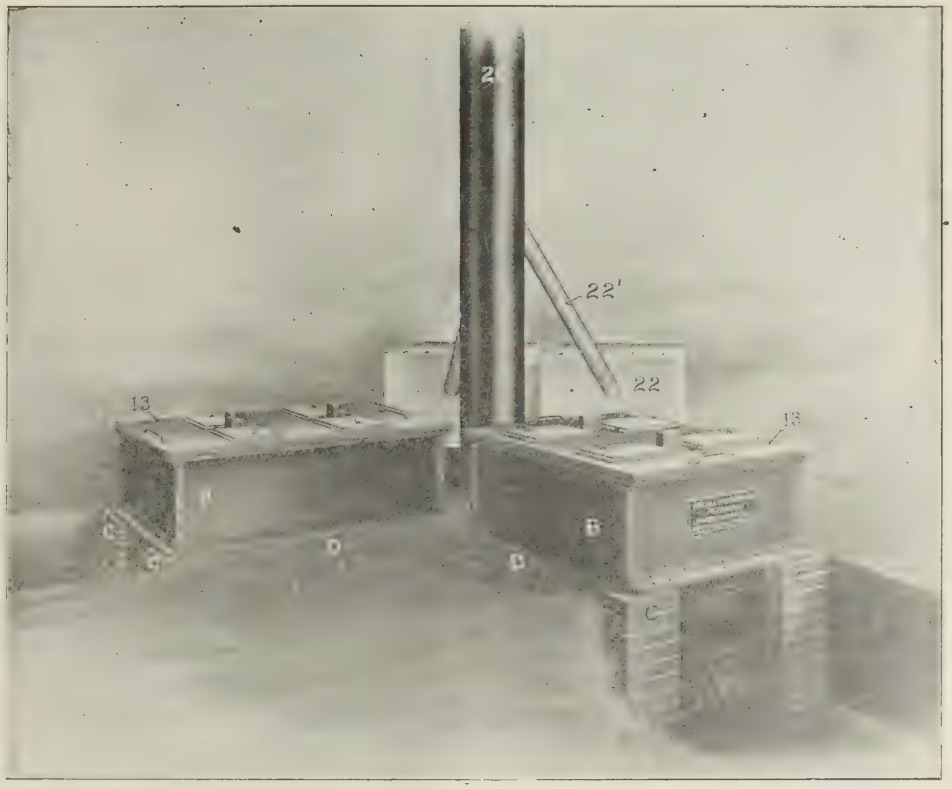

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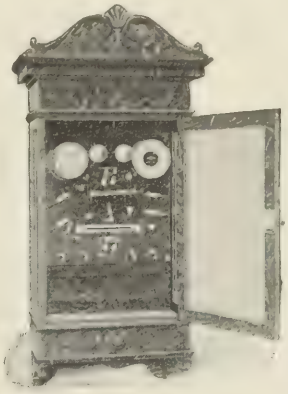

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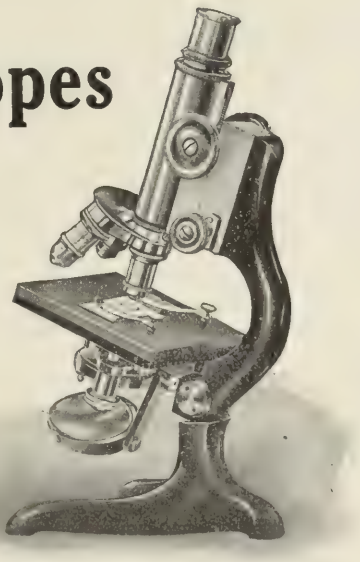

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ORIGINAL ARTICLES

THE JEROME COCHRAN LECTURE.*

Some of the Unfamiliar, Atypical Forms and Controverted Phases of Tuberculosis Which Have Been Revealed in Their True Etiologic Light By Recent Investigations.

By RUDOLPH MATAS, M.D.,
New Orleans, La.

I.

To the modern pathologist and clinician, thoroughly imbued and indoctrinated in the ubiquity of the tubercle bacillus and its vast potentialities for the production of lesions and disease types in every one of the tissues of the human or animal organism, the further expansion of its immense pathologic domain would seem almost impossible.

To one who has not intently followed the trend of recent events in this special field of research, it would seem at least difficult to add to the magnitude of the sovereignty of tuberculosis in the world of disease. And yet, if we scan the horizon attentively we will see what we fancied yesterday was a distinct boundary line is today a mere illusion when we climb to a greater height and transfer our observatory to a better point of vantage. And so it happens that as our methods of investigation improve with increasing technical knowledge, so does the point of view from which our concept of disease processes is formed.

II.

It is scarcely one hundred years ago that pulmonary consumption—phthisis, or wasting of the lungs, which medicine has recognized as a most typical clinical entity from the days of Hippocrates to the present time—was submerged in an abyss of conjecture and speculation, as far as its etiology and pathogenesis were concerned. It was not until 1808 that Bayle and Laennec, by their epochal discoveries, laid the foundation for the histo-pathologic concept which is now expressed in the word, "tuberculosis." Though the word "tubercle" had been used to describe the lesions found in the lungs of the phthisical as far back as the middle of the seventeenth century, by Sylvius (1672), they were attributed to enlargement of small glands following upon a scrofulous constitution. Manget, in 1700, described, for the first time, miliary tubercles. In an autopsy of a person dead of phthisis, granules were found in the lungs, liver, spleen, kidneys, mesenteric glands and intestines, which he compared to millet seeds (*semen milliiq.* Bayle (1810) is, however, the founder of the modern pathology of tuberculosis. He described the stage of development and accepts miliary tubercles as the starting point. At first, firm, later they soften, and are finally destroyed by suppuration. Such tubercles he describes in nearly all organs, and he recognized that in these various parts of the body

*The Jerome Cochran Lecture of the Medical Association of the State of Alabama, Montgomery, Ala., April 19, 1911.

they are related genetically, thus opening the view to the systemic dissemination of the disease outside of the lungs. The cheesy tubercle was a specific material characteristic of the disease. Laennec, the inspired genius who discovered the secret of auscultation, agreed with Bayle in regarding the miliary tubercle as the starting point, and, further, that the miliary granule of Bayle was simply the forerunner of the tubercle, the two bearing to each other the relation of green and ripe fruit. He recognized but one cause for true phthisis, namely, tuberculosis. The modern view, then, of the unicity of phthisis, as pulmonary consumption, dates from the work of Laennec.

However, the unicist or unitarian concept of pulmonary tuberculosis, thus established by Laennec, could not be confirmed with absolute certainty or authority solely by the unaided efforts of histologic microscopy which, at that time, was still in the cradle, as one of the infant sciences. For over half a century thereafter what might be called the war of the tubercles raged fiercely, the unicists, holding, with Laennec, to the identity and continuity of all the tubercular lesions in the lungs and esewhere, the fundamental type remaining the gray, or miliary, tubercle, or the granuloma of Bayle. The other faction, the dualists, headed by Virchow and his followers, attempted to disprove the specificity of yellow or caseous tubercle in which they saw only one form of tissue necrosis. The term tubercle Virchow restricted to the miliary granule of Bayle, and this miliary tubercle he classed with the lymphomata developing in pre-existing lymphoid tissue. He contended that caseation in the lung arose from other processes than tuberculosis. Hence, the dualistic doctrine of pulmonary consumption, which prevailed in the seventies, found its supreme expression in the pardoxic phrase of Niemeyer, the great clinician of Tubingen, which has since become famous: "The worst fate that can befall the consumptive is that he may become tuberculous."

It was not until 1865, more than a half century after Laennec, that the tide of evidence, which had been gradually rising higher in favor of the unicity of the tuberculosis lesions, culminated in the impressive and demonstrative experiments of Villemin, who, with almost prophetic vision, anticipated and pointed the way to the world-stirring discovery, by Robert Koch, of the specific bacillus, which followed seventeen years after. In the several communications to the French Academy from 1865 to 1869, he demonstrated the virulence, the specificity and transmissibility of tuberculosis. He demonstrated the identity of all the tuberculoses then described in man and animals, by inoculating, in the lower species, caseous masses taken from consumptives, as well as typical tubercles from men and the udder of infected cows. He concluded that "tuberculosis belongs to the virulent diseases and must be classed with syphilis, though it has closer affinities to farcy and glanders than to other virulent diseases."

"The inoculation of tubercle is not obtained merely by the visible and palpable matter, which is recognized in the pathologic products; its inoculability depends upon a more subtle agent, which is contained in the inoculated tissues, but which eludes our powers of detection."

"We must regard tuberculosis as a disease caused by a living germ, capable of multiplying and reproducing itself. Viruses, like parasites, multiply and reproduce themselves; we can only furnsh, by our humors and tissues, a pabulum for their existence. We never create them."

And yet, in spite of the marvelous precision and impressivenes of his demonstration, Villemin's preaching was lost for many years in the desert. However, after the lapse of another decade, Villemin's teaching was fully confirmed by the brilliant experiments of Cohnheim and Salomonsen (1877),

In this way the fundamental doctrine so clearly enunicated by the great triumvirate—Bayle, Laennec and Villemin—was at last confirmed and accepted.

The "criterion" of tubercuosis was then based solely upon the morphologic lesion, the tuberculoma, which, whether gray or miliary or caseous, was always grounded upon the same fundamental histologic characteristics which Koster so accurately described in 1869.

This tuberculoma, in its typical and mature form, is essentially constituted by a central mass of giant cells surrounded by two concentric zones; the external, made up of embryonal fibroblasts; the internal, of a layer of larger endothelial cells, the so-called epithelioid layer. Thus, the *"granulation tuberculouse"* of Bayle, the miliary tubercle of Laennec, the "simple tubercle" of Virchow and of Empis, were all assimilated and reduced to one essential and elemental type, viz.: that of Koster, which we accept today as the specific lesion of tuberculosis.

Armed with this histological test, the granuloma was used as a master key by the pathologists of the latter half of the century to unlock and disclose the presence of the tuberculosis infection which Villemin had so clearly proven to be one of the most inoculable, irritating and diffusible of the pathogenic poisons. Aided solely by this histologic guide, the domain of tuberculosis began to expand at a remarkable rate, and it was not long before a number of extra-pulmonary diseases, which had been attrbuted to scrofula and other hypothetical diatheses, now fell within the realm of tuberculosis.

III.

In this way the osseous and joint lesions which, since the days of Richard Wiseman, have been recognized under the name of "white swelling," began to be identified with tubercular process. The illuminatng and anatomical and histological researchs of Nelaton, Volkmann, Billroth, Bonnet, Lannelongue and Kiener, Trelat, Terrier, Brissaid, and of Max Schuller laid the foundation for that knowledge of the tuberculosis of bones and joints, tendons and aponeuroses, which now constitute a great part, if not the *magna pars,* of surgical pathology. Thus histo-pathology had fertilized the soil and thoroughly tilled it in readiness for the grain of the sower, who was Robert Koch, and for the seed, the tubercle bacillus, which he announced to the medical world with startling impressiveness in 1882.

This discovery was to leaven and quicken into new life the great body of facts which had been amassed by the pioneer observers of the histologic period. With the advent of Koch's bacillus not only the etiology, but the significance of the histo-pathology of tuberculosis seem to be illuminated as if by enchantment.

The bacillus created a new and infallible criterion of the presence of tubercular infection, which was destined to expand the catalogue of the tubercular diseases to encyclopedic proportions. Under its guidance the lesions of this disease could be read in a new biologic and philosophic light.

It was evident that the classic tuberculoma was *only one* of the evidences of the defensive reactions of the organism in its effort to arrest the progress of an invading parasite.

IV.

To most of those here present I have recited what is an old, familiar story, and its repetition would scarely be excusable as a superfluous waste of time were it not that it has its bearing upon what is not so familiar, and because it rationally explains what we had not suspected before, viz.: not only that the lesions of tuberculosis are merely histologic reactions of a defensive character excited by the presence of the parasite and its fixed and diffusible toxins, but that, in consonance with this view, the lesions, which were at one time regarded as essential and obligate phenomena of the disease, are often absent altogether, or vary from the most typical and scarcely appreciable tissue changes to the most typical tubercular formations, according to conditions which affect either the virulence of the parasite or the reactive capacity of the host.

It is easy to understand that the earlier observers, who depended solely on the tuberculoma as the only means of identifying the disease should have doubted the presence of tuberculosis when in suspected cases they discovered, instead of the typical tubercle formation, various abortive lesions from a mere aggregation of leucocytes, with a total absence of giant cells, to the grouping of a few endothelial cells, which had nothing suggestive of the specific structure of the mature lesion.

But what is more important is, that, in many cases, the tissue reactions fail to appear altogether and never show any tendency to produce what, we have been taught, is the essential lesion. In fact, the tissue changes in many cases are identical with those obtained by the action of other non-specific micro-organisms. These tissues may assume an acute or chronic type, and may vary from a simple passing fluxion or hyperemia, a serous or a fibrinous exudation, as is so often seen in the serous membranes of the chest, cranium or abdomen; or, it may appear as a simple cell infiltration or hyperplasia, with or without parenchymatous degeneration; or, it may appear solely as a sclerogenic process causing cirrhosis in the viscera, or interference with function in the joints, etc., all of which suggest the propriety of revising the classification of tubercular lesions in which this new group of *non-tuberculomatous,* atypical and non-specific tissue reactions may find a proper place under the general heading (as has been suggested by Poncet and others) of tuberculous inflammations, or, perhaps, the "inflammatory tuberculoses," or, again, the "non-tuberculomatous tuberculo-bacillary diseases."

V.

I have already hinted at the frequency and variety of the non-specific histologic lesions, which are excited by the presence of the bacillus tuberculosis and its poisons when introduced in the living tissues. A cursory glance at the evidence which has been carefully collected by several contemporary writers, notably by Arlomg, L. Bernard and Gougerot, Poncet, Leriche and others, who have devoted special attention to this subject in the last few years, will show how far away we have wandered from the traditional ideas. These changes have been studied in the connective tissues, including the fibrous capsules of joints and the synovial sacs, in tendons and their sheaths, in the lymphatic system, in all the serous membranes, in the glandular tissues, in the vascular endothelium and in the viscera. In all of these, hyperemia, with edema, serous and fibrinous exudation, cell proliferation with secondary hyperplasia, degeneration, necroses, scleroses, and even neoplastic formations of the fibroid, lipomatous, lymphoid and adenomatous types, have been described, seemingly in casual relation with the bacillus and its toxic products.

The visceral bacillary scleroses have been especially well studied experimentally, and are most interesting, as they seem to prove the specific influence of the bacillus and its poisons, free from the mixed infections which have been so frequently appealed to in explanation of these atypical inflammatory changes.

In the *liver,* for instance, tubercular cirrhosis, in which granulomatous infiltrations are totally absent, may assume the hypertrophic or atrophic type. First described by Hannot and Gilbert, the true relation of this visceral type of progressive sclerosis to tuberculosis was only recently discovered. Treboulet (1903, Jousset (1904), Phillibert and Blondin (1905), Gougerot (1908), have demonstrated the presence of the bacillus in the tissues, and, when this was absent, by the successful inoculation of the lesions into animals. It is evident then, that in the background of alcoholism, tuberculosis lurks in a great many cases of hepatic cirrhosis, which are attributed solely to alcoholic intoxication.

In addition, Hannot and Gilbert (1890-93), Piliet (1892), Haushalter (1893), Widal and Bezancon (1894), Claude (1903), Millian (1897), Gougerot (1908), were able to repro-

duce a typical cirrhosis of the liver by inoculating the tubercle bacillus in animals.

In the *kidney* we find the same kind of evidence. Jousset discovered the bacillus of Koch in the lesions of chronic interstitial nephritis. L. Bernard and Salomon obtained, by inoculating the bacillus in the peritoneum of guinea pigs, typical interstitial nephritides (contracted).

In the *spleen,* scleroses of tubercular bacillary origin have been discovered in man by Jeanselme and Weil. The same lesion reproduced experimentally in animals by Salomon and Paris.

In the *adrenals,* the same sclerotic process was reproduced by Leon Bernard and Bigart.

In the *thyroid,* by Roget and Garnier; in the *pancreas,* by Carnot, who also reproduced the disease experimentally (1898).

It is well known that since the earlier researches of Landouzy, the tubercular nature of *primary acute pleural effusions,* at one time described as idiopathic, or a "*frigore*" (due to cold), has been definitely accepted after years of discussion and controversy. These pleural lesions, it is true, are often accompanied by the formation of tubercles, but, surely, not always. The leucocytosis in the exudates (Widal), as well as the frequent presence of the bacillus in the tissues, attest its true nature. In the *pericardium,* in the *meninges,* the *synovial* sacs, the sero-fibrinous exudates accumulate without recognizable tubercle formation. Siredy and Tinel found the bacillus in *meningeal* exudates, which showed no tubercle. Gougerot, in three analagous cases; Oddo and Oliver, in spinal meningitis, caused by inoculation; Renaud, Gougerot and J. Tessier induced experimental tubercular meningitis in animals without ever producing tubercle. The successful inoculation of fluids obtained from *joints* which present the clinical characteristics of an acute rheumatic polyarthritis, and which showed clinically no evidence of tuberculosis, or at least no resemblance to white swellings, was obtained in animals by Dieulafoy and Griffon, Poncet and Dor, Millian, Delbet and Cartier.

The *endocardium* and the *endothelium* of blood vessels may also become the seat of a fibrinous exudation in no wise different from the infective endocarditis or endarteritis which occurs as a sequel to experimental inoculation obtained by the injection of streptococci, pneumococci, and other non-tubercular organisms.

Secondary *inflammatory endocarditis,* without tubercles, has been reported in tubercular patients; in these, the tubercle bacillus has been found in the cardiac lesions by Lion (1892), Londe et Pettit (1894), Leyden (1896), Etienne (1898), Cornil and Aguerre (1899), Ferrand and Rathery (1903), Lortat and Jacob and Sabareanu (1904), Ettinger and Braillon (1904), Barbier (1906). Braillon and Jousset had even demonstrated the presence of a tubercle bacillus in cases of primary endocarditis which simulated the rheumatic type of this disease on account of the purely fibrinous exudative lesions which were found (1903). Finally, says Leon Bernard, from whose learned essay I have quoted nearly all the data, I have been able to reproduce a similar endocarditis with fibrinous vegetations by the inoculation of Koch's bacillus in the heart or in the arteries of dogs and rabbits, without previous or associated valvular traumatism (1905). Similar lesions have been obtained in the aorta, likewise in the veins, by Lesne and Ravaut (1900). The same findings are mentioned by Chantemesse and Widal, Vaquez, Sabrazes and Mongour in the thrombophlebitis of tubercular subjects.

In addition, the cellular irritation provoked by the bacillus may go further than a simple hypertrophic or sclerogenic process and end in the formation of true neoplasms. Among the connective tissue tumors attributed to the presence of Koch's bacillus I will mention a case reported by Landouzy and Loedevich; also a cutaneous lymphadenoma by Gougerot in which the bacillus was discovered in the tissues. The tubercular parentage of many lymphomatous tumors is now generally ac-

cepted. The origin of many keloids, especially the keloid which follows in the scar after the extirpation of tuberculous glands, has been clearly established by Menard, Gougerot and Lamy, J. Nevins Hyde and others.

This relationsip is important and interesting to us as practitioners in the great black belt where keloid is even more frequent than tuberculosis in the negro race, and is worthy of separate consideration. The relation of tuberculosis to lipomatous formations is well substantiated by the facts of clinical experience, and similarly may we also mention the multiple fibro-adenomata of the breasts of young consumptive women.

These and other types of tuberculosis *sine tuberculo* could be quoted from the immense literature of the subject, but I have said enough to prove that our present knowledge of the histo-pathology of tuberculosis has divorced us completely from the older notion that tubercular infection was invariably characterized by the production of certain typical lesions which were embraced in the clinical and histo-pathologic picture of tuberculosis.

We contend with other recent investigators that the tubercle bacillus is capable of producing a variety of atypical lesions in addition to the classic tubercles, and that these need present no histologic specificity whatever.

VI.

In confirmation of the preceding views, and in partial explanation of the variable intensity of the organic changes caused by the bacillus, we find, among other important statements made by the late Prof. Arloing at the Sixth International Congress of Tuberculosis, held in Washington in September, 1908, the following: "Owing to the difference in the virulence of the bacillus (whether this virulence be attenuated or intensified by artificial means) the lesions are very atypical and so insignificant that they escape detection by the naked eye, and can only be recognized by histologic search. Diminution in the virulence may bring about a profound change in fortifying the organism in its resistance." There are cases, he says, in which the bacilli, introduced by inoculation, spread over the organism of the host and exhaust themselves without leaving any histologic trace of their passage. In such cases the existence of a tuberculous infection cannot be demonstrated by even the most minute microscopic lesions, and solely by the presence of the bacilli in the tissues, or by the revelations of the experimental methods of inoculation and the serum agglutination tests.

During life the same significance should be attached to positive tuberculin reactions, and, in mosts cases, the results obtained will be found to be correct.

Arloing describes his experiments on rabbits and other animals with virulent and attenuated bacilli injected in minimum quantities. He says: "If the injection introduces a small quantity of human bacilli (1-100 1-500 c, c.) in rabbits, the viscera, when examined two or three months after the inoculation, not only appear perfectly normal to the eye, but the microscopic changes which are produced by stronger injections are, in these cases, extremely minute and imperceptible. It is barely possible to recognize, in dissections of the liver, that there are here and there small areas of cell infiltration. It is more often difficult to decide whether there is any unusual tissue change at all. Yet rabbits, which have been inoculated with these small doses, have been made sick with the infection and become tainted with the virus of the disease. Tangible evidence of tuberculosis will become ultimately manifest in a certain number of the inoculated animals. It is a fact that long after these inoculations the rabbits frequently show evidence of specific arthritis or synovitis, the viscera still preserving their anatomical integrity.

Again, if in another series of experiments, half a c. c. of culture of bacilli of the human or of the bovine type—which is a strong dose for a rabbit—is injected in subjects of the bovine species, it will be practically impossible

to distinguish the presence of any histologic lesions in the liver or the other viscera. Yet, it is a fact that these animals, though apparently free from any anatomical evidence of the infection, react positively to tuberculin, whether this be applied to the skin, or subcutaneously, or to the conjunctiva, and also agglutinate the bacillus with their serum. (Arloing, Courmont's sero-agglutination test).

These facts lead us to conclude that there is such a thing as a tuberculous septicemia, or septic toxemia, which is undemonstrable by any of the known resources of histologic diagnosis that is revealed to us by experimental or biologic tests only.

VII.

THE TYPHO-BACILLOSIS OF LANDOUZY.

As a typical example of a grave tuberculous disease in which there are no tubercles or specific lesions, and only the general septic and toxic manifestations of a bacillary invasion, the disease which Landouzy first describd, in 1883, as "typho-bacillosis" is, indeed, worthy of our special attention. In addition to the acute general, or rare classic forms of disseminated miliary tuberculosis, which we all know and which assume a malignant typhoid type rapidly ending in death before the tubercles have had time to soften and caseate, Landouzy has introduced to us a hitherto unrecognized form of tuberculous toxemia, in which the final lesion localizations of the disease are preceded by a long preliminary typhoid or septic stage. In this disease the bacilli of tuberculosis are present and distributed over the organism of the host, but instead of expending their poisons locally, as is their wont, they begin the attack by saturating the organism with their fever-producing and other poisons, and, in this way, sap the strength and vitality of the body in preparation for their final onslaught on some special organ.

This type of tuberculosis manifests itself exclusively as a continued fever with remissions and enlargement of the spleen, without signs of visceral localization. At first glance there is a striking resemblance to typhoid fever, and it is not to be wondered at that these two typhoid states are frequently confounded. Indeed, they can be differentiated only by a careful analysis of the symptoms. These consist, in the first place, in an irregularity of the fever curve, which, although continuous, as in typhoid fever, exhibits greater oscillations, and the oscillations observed from day to day, or from week to week, are greater. In the second place, there is a lack of parallelism between pulse rate and temperature, the pulse being ordinarily more accelerated in the typho-bacillosis than in typhoid fever. There is a striking absence of localizing symptoms; no pharyngeal or bronchial catarrh; no intestinal catarrh or constipation, and, finally no rose spots. If, as happens in rare exceptions, this bacillary continued fever terminates fatally in two, three or four weeks, the autopsy, while negative in specific details, furnishes an explanation of this deceptive symptomatology. Nothing is found but the ordinary congestive and degenerative lesions seen in all severe septicemias; the lesions are diffuse and show no special preference for any organ. Occasionally, a few minute granulations, no larger than the point or the head of a pin, may be found. They are isolated, gray and translucent and insufficient to produce alone a symptomatology; in fact, they are barely sufficient to stamp the disease with its specific character.

Thus the differences between acute miliary tuberculosis (the classic "granule" of Empis) and those of the typho-bacillosis of Landouzy are both pathologic and symptomatic. In typho-bacillosis the complete absence of specific granulation formation in all the organs, and the absence of localizing symptoms, establish a clearly defined demarkation between these two types of acute bacillary septicemia. This is further accentuated by differences in the evolution of the two diseases. While acute granular phthisis (miliary tuberculosis) is always rapidly fatal, typho-bacillosis usually

ends in recovery, at least, so far as the generalized acute infection is concerned.

"In twenty-five years," says Landouzy, "I have seen only ten deaths from typho-bacillosis during that phase of the disease which imitates so closely the typhoid state. In the great majority of the cases, after three or four weeks of continuous fever, accompanied by prostration and usually going on to a true typhoid state, with dryness of tongue, moderate hypertrophy of the spleen, the patient becomes convalescent. But convalescence, as a rule, is imperfect; the patient does not regain his spirits; the ravenous appetite, characteristic of the typhoid convalescent, fails to appear, and emaciation persists. At the end of a few weeks, or maybe months, localizing signs of tuberculosis appear, either suddenly or insidiously, usually in the lungs or pleurae, and, in the case of children, quite frequently in the mesentery. These cases are usually labeled typhoid, paratyphoid or chronic auto-intoxication, according to their degrees of severity, before the final fatal outbreak of the localizing lesions of the second, or granulomatous, phase reveals the true nature of the disease.

Occasionally, convalescence following typho-bacillosis, appears to be normal and genuine; apyrexia is complete and recovery seems to be permanent, but even in cases of this kind a localized lesion develops sooner or later."

"One of my old patients in the Charite," says Landouzy, "was admitted with all the symptoms of typhoid fever except the rose spots. The sickness ran its regular course, the temperature became normal, and convalescence began. We were thinking of sending the patient to the country when he developed a left-sided pleurisy which required two tappings. Those who recover completely and definitely from typho-bacillosis are in the minority. Almost all the patients continue in a state of latent tuberculosis, and, in a few weeks or months, or even years, after recovery from the initial acute septicemia, they will finally become tuberculomatous."

Landouzy wrote twenty years ago: "It is only after having gone through a certain probationary stage, characterized by acute toxemia, that the tuberculous typhoid patient develops the pathology and symptomatology of tuberculosis." Sometimes this tranistion takes place imperceptibly, without the interposition of even an abortive convalescence. The continuous fever perists, while the tubercles generally develop, localizing signs make their appearance, either in the chest, brain or abdomen, but more often in the form of a typical infiltration of both apices."

This is what happened to a number of my patients who were attacked by typho-bacillosis in the spring and died during the winter with cavities in their lungs, after ten months of continuous fever, during which time they never left their beds.

VIII.

A very recent experience of my own practice has convinced me that Landouzy's typho-bacillosis is a clinical entity of real importance to the general practitioner, because, owing to the fact that this form of tuberculous septic toxemia has not been brought to our notice as prominently as it deserves by American and English-speaking clinicians and by the authors of the most recent text-books in this country, many cases fail to be recognized and are still treated as typhoid fever.

The patient in question was a young married woman, aged 32, who was brought to me from Columbus, Miss., on February 9, 1911, suffering from an obscure typhoidal condition, which had begun three months before. The patient had been in delicate health for three years, following an operation for purulent salpingitis. However, she was able to be about and attend to her household duties. Three months before admission, she was seized with a high fever, preceded by rigors, which assumed a remittent type. The temperature ranged between 103-104 and over. The fever continued irregularly six weeks, and then came to an end, with an intermission of two weeks during which she apparently improved and was supposed to be convalescent from typhoid. The improvement, however, was only temporary but never complete. There still remained a weak, prostrating feeling with a lack of appetite and an irritable stomach, which interfered with the proper nutrition of the patient. After the lapse of two weeks, the

fever returned; at first gradually, but finally attaining 103 and over in the evening exacerbations. The fever was of an irregularly remittent type and defervesced every morning after a profuse sweat. During this relapse, abdominal symptoms developed, without diarrhea; constipation being more often the case. The patient complained of vague pains in the abdomen, referred chiefly to the right half of the umbilicus and to the lower hypogastrium. The pain shifted from one part of the abdomen to the other, and, while at times very annoying, were never of an acute character. In the meantime, the patient was growing steadily weaker, the pulse more frequent and compressible, more anemic and marasmic. The medical attendant, a very intelligent and careful observer, suspected at first a secondary typhoidal cholecystitis, then, a possible chronic appendicitis, but, without any fixed diagnosis in his mind, he recognized that the condition had become surgical, and he sent her to me for an exploratory operation. On admission to the Touro Infirmary, May 9, the facts above mentioned were confirmed. The patient had all the appearance of a protracted typhoid pyrexia, without the enteric signs. After a careful examination of the abdomen, no satisfactory conclusion could be arrived at, as there were no definite recognizable foci of infection in the abdominal or pelvic organs. The abdominal walls were soft, thin, and relaxed, without the slightest signs of typanites; there was no muscular resistance or defensive attitude anywhere. Some tenderness could be elicited on deep palpation in the right iliac fossa, in the hypogastrium and in the right hypochondrium. The liver and spleen were undoubtedly enlarged, and the kidneys were extremely movable. No palpable mass or tumor could be recognized, except, that, in the region of the caecum, the bowel was apparently thicker and could be clearly outlined. The uterus was atrophied and completely involuted, the tubes and ovaries having been removed four years before this disease. The examination of the thoracic organs, lungs, heart, and great blood vessels, was negative. The patient, however, coughed and expectorated a thin, clear, frothy mucus. The urine though concentrated and highly colored, was normal. In view of the unsatisfactory and negative results of the physical examinations, nothing was done, and the patient was kept under observation. The blood and the feces were examined for typhoid, but always with negative results. The Widal test was tried repeatedly, always with negative results. The blood picture showed a very slight leucocytosis of 11000. The Von Pirquet reaction was tried, and a mild positive result was noted. Nothing was done for two days, but in view of the patient's progressive weakness, irritability, nausea, and vomiting, enlarged liver and greater complaint of pain in the abdomen, an exploratory incision was made in the right linea semilunaris, which revealed a pale peritoneum with a slight excess of fluid in the cavity, and an enlarged, very movable and distinctly fatty liver. The real cause of the patient's sufferings was found to be a long chain of multiple ulcerations of the ileum and ileo-caecum, which were seemingly of comparatively recent origin, judging by the great edematous infiltration of the intestinal wall and of the mesentery opposite the patches of ulceration. The ulcerative infiltrations began on the mesenteric side and tended to encircle the bowel, spreading transversely to the long axis of the gut. Twelve large patches of ulceration were counted in the first three feet of bowel, exclusive of the largest patch, which surrounded the ileo-caecal valve. Smaller patches of ulceration could be felt through the entire ileum and up in the jejunum, the disease embracing, in this way, over fifty per cent of the total gut length. The mesenteric glands were enlarged and could be felt like small eggs projecting under peritoneum. In view of these facts, it was concluded that the patient was suffering from a massive tuberculous invasion of the intestinal canal and that further surgical treatment was useless and unadvisable.

After distending the abdominal cavity with oxygen gas, the abdomen was closed and the patient was put back to bed. In view of the active and rapidly progressive tendency of the ulceration, the probability of an early and fatal perforation was announced to the patient's husband. The patient recovered quickly from the operation; the fever temporarily subsided for four days, when it began to rise and intermit with profuse sweats as before. She did fairly well until the night of the ninth day, when she suddenly developed all the signs of an acute perforative peritonitis, and died in less than twelve hours after the inception of the perforative symptoms.

The abdomen was re-opened after death and the specimens of the ulcerated bowel, including several perforations, were examined and preserved by Dr. Burd, the pathologist of the Infirmary, who found an abundance of tubercle bacilli in the scrapings removed from the surface of the ulcers, as well as in sections of the sub-mucous tissues.

In reflecting over the facts of this case it seems to us that this was an unquestionable example of Landouzy's typho-bacillosis. The septicemic and toxic stage, which constiuted the so-called typhoid during the first six weeks of the patient's illness, was, in reality, the first stage of Landouzy's disease; then followed the short, fever-free interval of two weeks, when the bacillary invasion localized itself definitely in the intestinal wall and in the mesenteric lymphatics.

"The prognosis has to be made both *quo ad vitam* and *quo ad futurum,* and the latter is the more important, since death is rare during the first stage of the disease. A patient who has had a typho-bacillosis, though he be apparently cured, is always in danger of developing tuberculosis. We say that the prognosis *quo ad vitam* is less unfavorable than the case of typhoid fever, while, on the other hand, the prognosis *quo ad futurum* is much more grave."

While a number of authorities, chiefly Euro-

pean, have accepted Landouzy's description (first given in 1883-1886, see Transactions Sixth International Congress of Tuberculosis, held in Washington, October, 1908) and have added their confirmatory observations, there is by no means unanimity on the subject. It has been objected that every typho-bacillosis patient really suffered from typhoid fever, his ultimately becoming tuberculous was due to an independent infection or a series of infections. "My old cases (1882-1886) of typho-bacillosis were regarded as cases of typhoid fever which had been contracted at the hospital. It seemed incredible that this form of acute infectious fever should end in recovery any more than acute miliary phthisis, which is always fatal. What gave plausibility to these objections was the fact that the symptomatic differences are extremely slight." When Landouzy described typho-bacillosis in 1883, one year after the discovery of the Koch bacillus, and the bacillus of Eberth had also just been isolated, we did not possess the technic to make an absolutely certain differential diagnosis between the typhoid and the tuberculous infections. We had to depend upon the clinical history and the course of the disease, and could only look with suspicion on the relapsing or slow cases of typhoid, but now that the laboratory methods have been currently adopted in ordinary practice, the past few years have furnished scientific proof of the existence of a tuberculous typho-bacillosis of the Landouzy type, and greatly facilitated the diagnosis. We can now make a positive diagnosis of typhoid by recovering the pathogenic organism of the blood cultures, or obtain the information from the Widal test. The same methods enable us to recognize paratyphoid fever. On the other hand, the von Pirquet, Moro or Arloing's and Courmont's serum agglutination reaction, Wolf-Eisner's Calmette's ophthalmo reaction, Jousset's inoscopy, and finally, the inoculation of guinea pigs with the blood of the patient, will enable us to recognize the tubercular condition. In both instances, it is well to note that the leucocyte count is usually below normal (leucopenia), though the lymphocytosis points to tubercular infection. Applied to the detection of tuberculous typho-bacillosis, these laboratory methods bring certainty to the diagnosis.

In 1888, Yersin demonstrated that rabbits inoculated in the veins with cultures of avian tuberculosis died with all the symptoms of an acute infection, viz.: fever, prostration, emaciation, and at autopsy nothing was demonstrated except congestive and degenerative lesions without granulomatous or microscopical tubercles. Strauss and Garmaleia, and subsequently, Pilliet, obtained identical results by the same experiments on guinea pigs. Recently Gourgerot (in 1908) obtained, even in a more complete manner, the clinical and anatomical picture of typho-bacillosis. "Not only, as was done by Yersin, an invariably fatal disease was produced, with very exceptional and rare granulomatous lesions, postmortem, but he reproduced in the animals the form of typho-bacillosis habitual in man, evolving in two stages. First, the acute typhoid stage, from which the animals recovered; then, after a remission, more or less long, a typical tuberculosis followed of an acute or chronic type, with the usual and characteristic tuberculo-caseous lesions. One of his animals, inoculated in the auricular vein, presented a sudden acute phase of typhoid toxemia (typho-bacillosis), and then recovered completely and permanently."

In reproducing the diverse modes of the typho-bacillary infection, these experiments furnished remarkable examples of the successions of different types obtained with the bacillus of Koch. After a period of general typho-bacillary infection, without tubercular lesions (Yersin type), the same animals died subsequently from tuberculosis with lesions of the Villemin type. As Gourgerot states: "The type Villemin (tuberculomatous) followed the type Yersin (without tubercles) just as we find clinically, in man, that the typhoidal bacillosis of Landouzy is followed by the typical tuberculosis of Laennec.

If we accept as facts the experimental and clinical data which I have just related, we must now conclude:

1. That active tuberculous infection may exist in the human and animal organism without any of the specific and clinical evidences which we have been taught, up to the present time, are the obligate proof of the infection.

2. That, in many instances, not only are the tissue changes imperceptible by the usual methods of detection, but that the bacilli themselves often escape our best methods of recognizing them.

3. That in many cases the only means of identifying the true character and nature of the infection rests solely upon the experimental inoculation of the suspected tissues (this often failing also), or upon the local, haemic and surface reactions obtained by applying the various tuberculin tests, which are used for diagnostic purposes *intra vitam*.

If this is all granted as true then we must admit that the criterion, or test, of tuberculosis has shifted one step further and is now, in its latest expresion, reduced, in the absence of the tuberculoma or of the bacillus, and after the exclusion of other infections, in correlation with the clinical facts, to the laboratory tests, the living and biologic reactions above referred to.

It is also probable that with this altered concept of the *modus operandi* of the tubercle bacillus in the human organism, and with still more sensitive and accurate methods of detecting its presence by the chemical reactions of its toxic products in the humors and excretions of the hosts (tests yet to come), we may discover that many disease types, which are now well defined clinically, but are of uncommon causation, are really of tubercular origin. Suffice it to recall the history of pulmonary phthisis, pleurisy, meningitis and peritonitis, as generic groups, in which the large claim of tuberculosis in their causation had not been fully conceded until very recent years. It is also plain that in the rheumatic diseases which are not known generally and not specifically or etiologically, such as acute and chronic rheumatoid arthritis, arthritis deformans, which we attribute to obscure auto-intoxication of intestinal and other derivation, and even many cases of acute articular rheumatism, may ultimately be recognized as forms of tuberculosis in disguise, or in forms that are not familiar to us as tuberculosis, a contention which Poncet and the Lyonese school is so intent at present in saying is true.

(To be concluded.)

ARTERIAL CHANGES ASSOCIATED WITH CARDIAC AND RENAL DISEASE.*

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In discussing the arterial changes associated with cardiac and renal disease it will be well to refer briefly to arterio-sclerosis as a separate entity. Arterial change may justly be regarded as a process normally incident to age, as much so as gray hair and wrinkles.

True, they come earlier in some than in others, and in some rather early in life, but nevertheless they are senile developments. They may be hastened by infectious diseases, such as typhoid; they are constantly hastened by overwork, overeating, overdrinking, mental strain or any factor causing hyper-tension or resulting in an accumulation of waste products. It is not necessary to our purpose to go into any detailed description of the actual

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changes that occur in the vessels. In a general way, they comprise various degenerative changes resulting in sclerosis of the coats, alterations in the caliber—usually a narrowing rather than dilatation, localized giving away of the walls, leading to small or large aneurisms, unsatisfactory responses to vaso-motor influences, all gradually leading to nutritional changes in the various organs of the body. These phenomena are very generally associated with high blood pressure, and, as has been proved by various experiments, the highest pressure leads to further changes in the vessels. Arterio-sclerosis, with high pressure, seems also to predispose to vascular spasm, giving rise to such symptoms, usually transient, as the organ whose blood supply is thus impaired may furnish.

It is well known that arterial degeneration, whether it occur as the chief and only demonstrable lesion, or in more or less close association with renal and cardiac disease, has a tendency to unequally attack the several groups of vessels. In one individual the superficial and palpable arteries will be markedly hard and sclerosed; in another, the visceral arteries, say, of the heart, brain, abdominal organs or kidney are more involved. The factors that determine the location of the more marked vascular changes are partly known, but only partly. It is known that hard work with one arm will result in more advanced arterial change in that arm, just as hard work, in a general way, contributes to such a change, but why in one patient the vessels of the brain seem to be more affected, the aorta in another, and the coronaries in another, are questions that have not yet been solved, but they have an all-important bearing on the determination of the symptoms. As already hinted the result of alterations in the caliber of the small vessels and the no less important loss of elasticity and natural response to stimuli of various kinds is altered nutrition of the structures supplied. The character of tissue change will depend, in a measure, on the organ involved, and the seriousness of the process is greater in case the cardiac arteries or those of the brain bear the brunt of attack.

In considering arterial disease in the association with cardiac and renal pathology we are met at once with great difficulty in establishing the proper etiological relations they bear to each other. To what extent is the arterial change dependent on pathological change in the heart or kidney. Is a hypertrophied heart in itself capable of originating degenerative changes in the vessels or promoting such changes once they are started? Are the toxines resulting from deficient function on the part of the kidney capable of producing arterial sclerosis by direct action on the vessels or by heightening the blood pressure—thus making vascular changes the result of kidney disease. Or do the same poisons that attack the kidneys and cause pathological change there act with equal injury to the vessels? With the exception of infectious diseases, like scarlet fever and diphtheria, and the unknown poisons of puerperal conditions, and lead, we have very little definite knowledge of the agents by which pathological conditions in the kidneys are brought about. Of course, we know in a general way that patients who overwork, overeat and overdrink develop nephritis, but that is far from being able to say with positiveness what it is that harms the kidneys. On the other hand we know that these same things produce arterial sclerosis, and we know that increased work alone, increased tension, elevated blood pressure are quite able to produce arterio-sclerosis, and whether they produce the result only by heightened tension or by an additional effect as an irritant to the vessel wall at present is not demonstrable. Clinically, we know that the chronic types of nephritis, especially chronic interstitial nephritis, are associated with more or less vascular disease, both in the kidneys themselves and throughout the general system, but how far they are independent processes, how far they are dependent on common causes, or how far dependent on each other pathologists are not fully informed. The difficulty of the problem

is enhanced by the fact that extensive arterial disease may be associated with a practically perfectly functionating kidney, though there will be definite changes in the kidney structure. On the other hand a kidney may be badly crippled and the patient suffer uremic symptoms with a very moderate grade of arterial disease. This absence of well marked arterial disease is more often seen in chronic parenchymatous nephritis than in the interstitial, and in a patient known to be nephritic the development of arterial changes is good evidence that the degenerating and hardening processes have set up in the kidney. In kidneys that are primarily sclerotic the vascular and the nephritic changes seem to go hand in hand.

The relation of arterial disease to changes in the heart is not obscure. Arterio-sclerosis means increased peripheral resistance; increased resistance means increased work on the part of the left ventricle; increased work means hypertrophy so that a hypertrophied left ventricle usually develops in consequence of the arterial changes. Sooner or later degenerative changes take place in such a hypertrophied heart, and then some severe strain or gradual change results in dilation, and after that hypertrophy fails to keep step. If the arterial disease attacks the coronary arteries early then early degenerative changes take place in the heart so that hypertrophy may not develop to a great extent; instead these changes lead to rapid and possibly fatal heart failure. In effect, then, the life of the heart is dependent on the condition of the vessels—coronary and peripheral. Whatever be the interdependence of cardiac, vascular and renal disease the great fact is that they are intimately associated, especially at or after middle life, and in the management of a case of this type, the heart, the arteries and the kidney must be studied separately and jointly, and each one come in for its share of attention. We have to deal not with a case of heart disease, not with a case of nephritis or an arterial disease, but with a generalized process that requires recognition in our therapy.

The tendency of arterial disease to attack different vascular areas unequally accounts for the varying clinical phenomena and furnishes suggestion as to treatment. The development of symptoms in an organ may be quite unexpected and violent, though in the majority of cases evidence gradually accumlates that one or another organ is to succumb to the insidious process.

In many cases the heart first exhibits signs of distress. Vague or well defined pain over the precordium calls attention to the fact that the progressive ischemia—the poor fare—has robbed the heart of its nutrition and power. Whether such cardiac pains are mild or severe enough to be called classic angnia pectoris is a matter of not so much significance as the ease with which they are induced. The tendency to regard cardiac pain as not serious, because it is not severe and anginal is, I think, to be condemned. There occur many sudden and unexpected deaths in men of sixty or less whose moderate precordial pains have been lightly weighed. Just what occurs in such an attack of precordial pain cannot often be determined.

Spasm of small arteries. producing temporary ischemia, probably occurs in many cases. Slight localized strain, thrombosis of very small vessels no doubt occur. Thrombosis of the large arteries is more serious, but less frequent. Severe strain may easily lead to dilation. Instant relief by vaso-dilators, that is often secured, seems to confirm the view that arterial spasm may have a good deal to do with cardiac pain. We certainly have evidences that arterio sclerosis predisposes to spasm of arteries. Instead of pain or marked angina the heart may give symptoms of simple loss of compensation very much as the ordinary loss of compensation seen in earlier life from rheumatic endocarditis.

The bearing that the presence of arterial disease has on a heart is fundamental. While any case of valvular disease showing loss of compensation will exhibit symptoms on the part of the vessels and kidney—such as edema,

scanty urine, casts and albumen—these have a very different significance in case the valvular lesion be one of sclerotic origin or associated with arterial disease. We are accustomed to regard a valvular lesion arising—say, at forty or fifty, as a very different problem from that arising from an endocarditis of rheumatic origin, which nearly always occurs in earlier life. The former is necessarily a progresive pathology, and this progressiveness in reality arises from the inherent nature of the attack on the vessels and valves and the inability on the part of the heart and blood vessels because of degenerative changes to respond to hygienic or medicinal measures. If we have urinary findings in a case of broken compensation of the one type we can expect that rest, digitalis and other measures will almost, if not entirely, relieve the situation, but in the other way we may safely assume that the same progresive sclerosis that has attacked the valves and the blood vessels has, through them, attacked the heart muscle, and has also produced some pathological changes in the kidney, and that toxic symptoms of various kinds may be expected to develop. And these toxic symptoms may vary from insignificant and transient phenomena to a profound uremia.

In one type of heart case—the rheumatic—the vascular features are limited to congestion with edema and lowered blood pressure, both relievable because the vessels are healthy; treatment is largely rest and digitalis. In broken compensation of the second form restoration is slow and tedious, even after the first breakdown. Rest and digitalis are indicated, but the pipes, great and small, are no longer capable of prompt response to rest or other remedial agent, and no longer able to distribute nutriment to the crippled organs.

Next to the symptoms produced by disease in the coronary arteries those from involvement of cerebral arteries are most frequent, and in a given case both the every-day symptoms and the final taking off may be because of such involvement; dizziness, peripheral numbness, temporary spasm or edema give warning that thrombosis, or rupture, may occur at any time. Apoplexy is a common cause of death in chronic nephritis. General convulsions in a patient in middle life must not be too hastily assumed to be uremic; they are often due to arterio sclerosis alone. Some authors think that the convulsive features found in Stokes-Adams disease are due to arterial spasm. Mental changes too often occur in these patients, and it is impossible to say in how far they are toxic and how far purely the result of vascular changes. Sudden mental symptoms in a patient of middle age, or later, should call for careful examination of the urine and the careful study of the arterial system. Progressive mental changes after sixty, general paresis being more common at an early age, are nearly always due to cerebral changes attending vascular degeneration, and while the kidney may be involved the symptoms are probably in no sense uremic.

If the symptoms determine more toward the kidney they are usually those of urinary findings such as scanty urine, abundant urine, casts, albumen and the various uremic phenomena that I shall not detail. The suddenness with which uremia may develop in patients that think they are well suggests that they are not simply due to poison, but that in some way not well understood vascular accidents, such as spasm or edema, are more responsible for the clinical phenomena. However, many of the symptoms are purely toxic, and may occur while the flow of urine is still abundant though showing the characteristic features found in the cirrhotic kidneys. External visible hemorrhage is not rare in these cases. Gross hemorrhage from the kidney, for instance, is not uncommon, and may be the first accident calling our attention to those organs. A sudden hemorrhage from the kidney in a middle-aged patient should suggest not simply stone or tuberculosis, but a much more extensive pathology, which a careful test of urine, heart, blood vessels and blood pressure will be able to confirm. Retinal hemorrhages are well rec-

ognized accidents of chronic nephritis, and may be the first symptom to arouse the physician's suspicion. Hemorrhage from many other structures, such as the nose, gums or bowels are recognized accidents of chronic interstitial nephritis. Epistaxis, especially, must not be neglected, but should call for examination of urine. The hemorrhagic effusions of the pericardium and the pleura are usually terminal events. In a case recently under observation the last few weeks of life saw frequent hemorhages from the urinary tract and gums. Hemorrhage, in many instances, cannot be accounted for on the ground of increased blood pressure; in fact, it occurs when there has been a general circulatory failure and the pressure low. It can be rationally accounted for only on the assumption that in nephritis some poison profoundly alters the nutrition of the vessel walls so that blood escapes through them. Indeed, we cannot easily account for the edema of nephritis except on the basis of nutritional changes in the capillaries, though the blood itself is distinctly altered.

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In outlining a campaign of management in a case of cardiac, vascular and renal disease the problem is very complex. The task before us is chiefly to maintain the status quo—in that we advise against everything that could directly or indirectly raise the blood pressure, such as muscular strain, mental excitement, incomplete elimination of waste products; in other words, reduce to a minimum the wear and tear of life as well as the poisons, both endogenous and exogenous, that induce vascular and kidney disease and all the evils that follow in their train. The free liver must tone down in his habits; eat simple food and less of it, avoid constipation, take moderate exercise, invite metabolism by living in the fresh air, drink plenty of water, avoid alcohol, and probably tobacco. It is not our purpose to go thoroughly into the question of feeding chronic nephritics. I shall only say that in such cases a milk diet is not sufficient in caloric value unless such large amounts be taken as will make the proteid content of the diet too heavy for a bad kidney. More than that they will not stand for such restriction. These patients are not patients of a week or a month but of years, and such diet as will attract by its variety and palatability and furnish a reasonably full caloric must be selected—regardless of theoretical notions as to what may be harmful. But such a concession to taste and to the needs of nutrition is far from agreeing to reckless feeding. Our greatest difficulty is not in diet, but it comes in directing the daily life of these patients who are engaged in more or less strenuous business.

The cares and worries of professional or business life are necessary incidents to their proper evolution and maintenance, and to give these up is practically to give up such careers. Yet nothing is more certain than that they are harmful. If definite evidence of failure, cerebral, cardiac or nephritic have occurred nothing but a complete release from business cares is wise. However, we cannot condemn the spirit of the man or woman who prefers to die in harness.

As for drugs they constitute a small part of the treatment. I have some faith in vascular sedatives like veratrum where there is high tension associated with cardiac distress. I have not seen much result from nitroglycerine. I have considerable faith in the iodides, especially when the symptoms are referable to the vessels in the brain; of course, it must be given for some time. Following the advice of Dr. Musser, particularly, I also have great faith in the value of opium in the cardiac cases. I have one case on hand now with all of the cardiac, vascular and renal phenomena whose life seems to me to have been definitely prolonged and made fairly comfortable by the periodic administration of the pill of opium three times a day. In other cases it has seemed to help tide over periods of distress. I believe it does not harm the kidney if constipation is prevented.

Theoretically, climate is good for these patients, such climates as furnish much sunshine

and allow a large portion of time out of doors. If this climate can be secured only by traveling a long distance I doubt the wisdom of advising it. Life in these cases hangs often by a slender thread, and sudden death is so possible that I advise such a course only in selected cases.

CONCLUSION.

To Summarize: The association of vascular disease with cardiac or renal conditions is of almost constant occurrence at or after middle life. It may well be and is a direct cause of further pathology in both those organs, especially the heart. It sometimes exists without marked changes in those organs. A nephritic with marked arterio-sclerosis is probably more likely to die of some vascular accident than with uremia. A patient showing these combined pathological states cannot be properly handled without close study of his blood vessels and an effort to at least relieve some of the strain to which they are subject.

TRANSLATION.

*NARCOSIS IN ADENOTOMY (ADENOIDS).**

By DR. GOTTLIEB KIAR,
Copenhagen, Denmark.

Translated by RICHMOND MCKINNEY, A.M., M.D.,
Professor of Diseases of the Nose, Throat and Ear, College of Physicians and Surgeons of the University of Memphis.

The removal of adenoid vegtations is such a common operation that it is practiced every day in every large clinic, and at the hands of skilled physicians requires but a few seconds. Nevertheless, the question of narcosis in these cases constantly presents itself in the foreground. It is therefore to be hoped that the question may be made clear by this discussion; that individual opinions concerning narcosis shall be given, and that those who stand against the use of narcosis shall maintain their position.

As concerns the danger, there exists a great difference between ether and chloroform in that the narcosis period with ether is much greater—that is, the difference between the necessary quantity for the production of narcosis and a fatal dose is much larger in ether than with chloroform. Also, with ether heart weakness does not so readily develop. The investigations of Holscher have shown that the often mentioned irritation of the bronchial mucous membrane from ether plays no great role, pneumonia developing with chloroform practically as frequently.

When we collect the statistics of Roger William, Julliard-Garre, Gurlt and Mikulicz, we find 878,148 chloroform narcoses with 344 fatalities; 409,149 ether narcoses, with 38 fatalities, this giving a mortality in chloroform of

*This abstract of Kiar's paper from the proceedings of the seventy-first meeting of the Danish Oto-laryngological Society, was published in the Monatsschrift fur Ohrenheilkunde, etc., for March, 1911, and appeared of considerable interest owing to its statistical investigation. The discussion that followed the reading of the paper was full and interesting, the general trend of opiniong seeming to be, apart from that of some who advocated the employment of no anesthetic, that ether decidedly is the best general anesthetic for these cases.

The question seemed to be only as to the anesthetic for adenoids, no mention being made of tonsils, and since at least three-fourths of the cases with adenoids suffer also with hypertrophied and diseased faucial tonsils, which certainly require removal, it is to be regretted that no mention was made of the anesthetic requisites for tonsillectomy, or, as generally used in Europe, tonsillotomy, and one wonders if those who urged that adenoids be removed without the use of a general anesthetic would also advocate the removal of tonsils at the same time without an anesthetic, thus inducing severe shock from nervousness and pain, which latter these little patients indubitably would experience if this method of procedure were adopted.
R. M.

one in 2,500; in ether, one in 10,767. Gurlt's statistics of 240,806 chloroform narcoses show that in 114 fatalities there were 65 primary deaths due to chloroform, while a primary ether fatality does not exist. That, however, statistics may err is shown by Syme's report of 4,500 chloroform narcoses without a single fatality, while, on the other hand, the statistics of the "Assistance Publique" give 13,000 chloroform narcoses with 30 fatalities. During recent years mixed narcosis has increasingly been used, chiefly a mixture of chloroform, ether and alcohol.

In the special medical journals for the last ten years it is noticed that many colleagues, especially in America, England and Australia, but also in Germany, have published long lists of chloroform anesthesias in adenotomy, in which no bad results came. However, there are also several who warn against the general use of this anesthetic, for example, Buttlin, who, personally, has had one fatality in 750.

Furthermore, from England come statistics from May, 1892, to August, 1893, with not less than 6 fatalities, all in children between 3 and 14 years of age. Mendoza, in a period from 1892 to 1895, collected 15 fatalities, and Sprague, from 1890 to 1905, 21 fatalities. Certainly the number is much higher, in view of the fact that these cases are generally not pubished, and the cases mentioned nearly always are privately collected. Here in Denmark, since the report of Rovsing in 1904, scarcely anyone is bold enough to use chloroform for this purpose. Ether narcosis, on the other hand, appears apparently free from danger. At least, no fatality from primary ether is known up to now, and here always the narcosis is short and not deep.

Ether intoxication (Sudeck, 1901) is a suffocation narcosis. After one or two deep inspirations with a tightly closed mask the latter is removed, and almost at the same moment sensibility is lost. This method, however, is not practical for adenotomy. On the contrary, we have in primary ether narcosis (Kuhn-Faber, 1904) an excellent method. In a Wans mask (a form of closed inhaler, apparently—translator), 22 centimeters of ether are dropped, and while the patient is instructed to breathe quietly and deeply, the mask is slowly approached to the face. If the mask is too rapidly brought down the patient is overcome by the ether, with resulting anxiety and restlessness. After about four minutes there will be deep, and sometimes snoring, respiration, with partial dilation of the pupils and slight cyanosis, although the corneal reflex will still be present. If the mask remains held close for from one to two minutes, then an anesthesia of three to four minutes' duration follows. On awakening, the patient for a few minutes feels drunk and dizzy, but can then get up. Primary ether narcosis is, therefore, especially indicated for adenotomy.

As concerns the position of the patient during narcosis, the horizontal position is used mostly. After narcosis supervenes, the patient can be placed on the side or upright. In England a great many operate with the head hanging, but by this method intense congestion and pronounced hemorrhage result. If I find ether narcosis necessary, either on account of fear and uncontrollability of the child, or in deference to the insistence of the parents, I nearly always use a horizontal, side position, and always use primary ether narcosis.

Is there, then, no danger from primary ether narcosis? The statistics, indeed, say no, but despite this one should always be careful. Formerly chloroform narcosis was held to be quite free from danger in children, but now a considerable number of fatalities have been reported. I would always, especially in children with status lymphaticus, be very careful.

With nitrous oxide anesthesia danger arises when the narcosis is prolonged, and in children, who nearly always fight asphyxia, narcosis is usually so short enduring that it does not suffice. In children under four years of age it should never be used, because the increase of blood pressure always present is the same as that found in suffocation. Wood reports in North America three fatalities in 750,-

000 anesthesias; Bennett mentions thirty fatalities, and Rovsing one, in an adenotomy. At the present time the large chemical concerns produce nitrous oxide gas in a very pure state, and we estimate now only one fatality in 10,000,000. If nitrous oxide gas is mixed with oxygen, there will be no cyanosis, but it appears that complete analgesia is not then obtained. In all events, primary ether narcosis is far preferable in adenotomy.

Bromide of ethyl is given preference in France. Statistical investgations from 1889 to 1891 show that there was not a single fatality in 20,000 narcoses, although from 1891 to 1895, in 9,000 narcoses, there were two fatalities. Mendoza is a zealous opponent of ethyl bromide narcosis, and apparently justly so. From his small work one sees how little statistics can be depeded upon. From the literature he has collected ten fatalities, and in a single year himself experienced one, and from colleagues obtained reports of two fatalities with chloroform, one with ethyl bromide, and one with cocaine, which had never been reported, and, furthermore, one of his friends knew of three fatalities with ethyl bromide narcosis in adenotomy during one year, which also had never been reported. And, also, Manquat collected for the year 1893 not less than sixteen reported ethyl bromide fatalities. With such results before us one is not inclined readily to employ ethyl bromide narcosis.

Chloride of ethyl, the use of which as a general anesthetic was discovered by Carlsen, a dentist of Gothenburg, in 1894, acts nearly the same as bromide of ethyl. McCardie reported a collection of 16,000 cases, with one fatality. McWare found one in 12,436. Lotheissen, after careful investigation, found a mortality of one in 2,540, and Potter one in 15,000. Nevertheless, this agent is used a great deal in France.

Somnoform (60 per cent ethyl chloride, 35 per cent methyl chloride, 5 per cent ethyl bromide) was first used in Moure's clinic by Relland, a dentist, in 1901. In 600,000 narcoses not one time was heart or respiratory paralysis observed. It is also used in France and Spain. Compaired, in the latter country, having reported its use 2,000 times, and praises it greatly. Somnoform is a mixture of three agents, any one of which possesses much greater heart paralyzing properties than ether, and therefore it is very improbable that this effect is removed by the mixture.

It remains only to compare nitrous oxide and ether, so far as adenotomy is concerned, and between these there can be no question that primary ether narcosis is much preferable.

It is generally accepted that general anesthesia in operations on the upper air passages is much more dangerous than where other portions of the body are concerned, but it also is a matter of fact that every narcosis is a step toward death, or, as Holmes says: "When we take an anesthetic, we purchase a round trip ticket, but not all use the return half." Furthermore, there exists some danger in adenotomy of itself, Lunnin finding, in 1902, 13 fatalities reported, this number having increased to 21 at this time.* It is true that in proportion to the enormous number of adenotomies this is a very small number, but still there exists some danger, and this should not be increased through a new and unnecessary agent.

*Author does not give causes.—Translator.

PELLAGRA—SYMPTOMS, DIAGNOSIS AND TREATMENT

By DR. J. G. WILKINSON,
Ragland, Ala.

The recent discovery of a probably old disease has caused much concern among scientists and alarm among the public. Not since the days of yellow fever have we heard so much in regard to a serious disease as there exists over pellagra.

Three years ago we saw our first case before the State Medical Association. Two years ago doctors began to be alert. One year later and they were reporting many cases. It was thought that some 5,000 cases existed in the United States. To-day the State of Georgia has estimated that no less than 50,000 cases exist there alone. However, we accept this report from Dr. Mizell with a degree of allowance. It was predicted by us in the report before our recent State Medical Association that this summer would witness a rapid spread of pellagra, but this surpasses our expectation. At the present rate of increase, the Southland will soon be overspread with this malady.

DEFINITION.

Pellagra is a tropical disease of toxic origin, manifested by gastro-intestinal nervous disturbances and cutaneous lesions.

GENERAL HISTORY.

We will present the latest and most accepted theories. The initial symptoms being gastro-intestinal, we naturally look for the origin in the food or water. The former is held to be from the product of cereals improperly cured, producing toxic effects through the chemical changes taking place in the curing of such grain. Alessandrini has proved this by experiment on animals to his satisfaction. Many by-products are manufactured from corn and used as so-called breakfast foods; the purity of many is questionable.

Saunborn's investigation has shown the source of infection to come from the bite of a fly that infests the pools of water not unlike the mosquito that conveys malaria and yellow fever. Extensive research and travels through Southern Europe have convinced him of this mode of conveyance, and many scientists have accepted this theory. Among the patients under our care we had two living close beside a stagnant pool of water and the infections came close together.

The possibility or probability of this disease being transmissible has been doubted, but it becomes us to ascertain definitely, that steps may be taken to avoid its spread. We believe it the part of wisdom to screen all patients, at least for their own comfort, and avoid the posible transmission to others.

The most recent data relative to its origin comes from Mizell, who claims that cotton-seed oil and its products cause pellagra. He claims, with the high price of hog lard, that cottolene has become extensively used, hence the increase of this disease.

SYMPTOMS.

The symptoms of pellagra are varied and some not constant, but they are principally as follows: Gastro-intestinal, cutaneous, nervous and mental. Other manifestations are stomatitis, diarrhoea or constipation and anemia. Temperature is very slight or absent in the early or acute stage, and high temperature denotes infection and complications. It may vary from 99 to 103 F., according to conditions, and is very intermittent. Headache, pain in the neck or abdomen are common. Sometimes nausea, stupor and malaise. Lost appetite, indifference, neglect of duties usually performed promptly; nervous, depressed, loss of memory to a degree; slow, dragging gait;

*Read before the Medical Association of the State of Alabama, at Montgomery, April, 1911.

peevish; easily disturbed; melancholia, delirium and insanity may occur.

DIAGNOSIS—GASTRO-INTESTINAL TYPE.

Some contend that the earliest symptoms are the gastric disturbances. Most pellagrins are dyspeptics, having this trouble prior to the skin eruption. The indigestion is a flatulent disturbance. Painful, burning sensation in the throat or stomach, with a feeling of fullness or choking. The gastric juice is diminished in hydrochloric acid, there being a decrease in the secretion of the hydrochloric acid. Gastralgia may follow these troubles. These conditions may be troublesome during the winter season when all other symptoms are absent. Patients have been known to have gastric trouble for three years before the skin lesions appeared; therefore this should be considered a cardinal point.

NERVOUS AND MENTAL TYPES.

When the gastric symptoms are associated with neurasthenia and mental manifestations, we should suspect pellagra and make a close study for other lesions to appear. In Italy from 4 to 10 per cent. of all pellagrins become insane. In the early stage the nervous system undergoes a modification. The patient may be easily excited. An insult, threatened danger or sudden excitement may completely carry them away. Neurasthenia, lost interest in work, disturbance in memory, slow, dragging and uncertain gait in walking; an expression of sadness, anxious look or staring gaze or wild, excited facial expression; acute delirium, hallucinations or insanity may occur. Tonzi believes that insanity occurs in those who have long suffered from pellagra, with many seasonable remissions, that have had dermatitis for several years. Through the nervous disturbances the following manifestations may occur: Hypochondria, neuralgia, epilepsy and tetanus. All these conditions have the regular symptoms much increased in the neurosis.

CUTANEOUS TYPE.

The skin lesions are pathognomonic and are indicative of pellagra, just as the eruptions in measles, and we can never be sure of the disease until the erythema appears. The typical case will have eruptions upon the dorsal surface of the hands; sun-tan, brown, dark, red, changing with age to a bronze color. Regular in form, and coming on with the hot season, to disappear with the coming of the cold weather. All exposed surface will or may have the eruption. We have seen its first appearance upon the cheek, nose, and then upon the palm or surface of the fingers. The lesions extend up the forearm and over the face, eyebrows, forehead and ears. The feet and legs have the eruptions, and it may extend to the knees. An erythema upon the elbow has been seen when absent elsewhere, and appears to be an early symptom. We have observed an erythema upon the lumbar vertebrae and upon the heel in early skin manifestations. Edema of the feet occurs in the later stage. Pus infects the face, and superficial ulcers occur over the face and ears, and we have seen them on the finger tips. Desquamation takes place. After the scaling we find the skin red and glossy in appearance, with an induration over the most affected areas. Fall remissions occur in long-standing cases, and much danger exists just here in complications. The cold will drive in the eruptions, and pneumonia or other pulmonary troubles are liable to occur.

TYPHOID TYPE.

This is considered the terminal form of pellagra. In this form we have the gastro-intestinal and nervous symptoms with the dermatitis. This type differs from typhoid fever in having many cylinders in the urine and the presence of urea in the blood. All the typhoid symptoms are present with increased exacerbations. There are no prodromal symptoms, and the attack is short and rarely ends

in recovery. In addition to the common manifestations, one may see the head contracted, the face buried deep in the pillow, tetanic attacks, staring eyes, paralysis of the bladder, edema of the extremities, dysphagia, stupor, vomiting, refusal of food. High temperature reached in the first days of the attack. The urine is alkaline in reaction with low specific gravity. The speech is drawling and has a nasal twang. Tremors and contractions are seen in the face from time to time. The stools have a characteristic odor, and nurses claim that they have been able to diagnose pellagra from this alone. We have observed this odor, and have also seen the pea-soup stools streaked with blood. Death usually ensues in from one to two weeks.

BRONCHITIS, PNEUMONIA AND TUBERCULOSIS are some of the complications that follow pellagra in the last stages, just as they are secondary to typhoid fever or other acute infectious diseases. In cases of long standing, with many remissions, we believe any of these troubles may develop. When the skin lesions are driven in by the cold weather, the mucous membrane becomes affected similar to the cutaneous surface. We have observed the nose, throat and the entire respiratory tract so affected. Stomatitis, diarrhoea and hemorrhage occur in this late stage. Obstruction of the entire respiratory tract has been seen. When the mucous membrane becomes the seat of the trouble, the skin may clear completely of the lesions. When pneumonia or bronchial trouble develops, the patient expectorates a viscid and tenacious sputa unlike any other. Hoarseness has been observed to come on in the evenings during the hot season of each summer. Pulmonary complications soon end in exhaustion or cardiac failure.

TREATMENT.

A large per cent. of patients die under institutional treatment as well as in private practice, but many reports of cures are made.

Atoxyl has been used, with results reported, as has hexamethylenamin. The latter was used by Tucker in 5 to 7.5 grain doses four times daily. He reports prompt results from this treatment. The gastro-intestinal and cutaneous symptoms cleared up promptly. Cole has met with encouraging results from transfusion. All advanced cases of anemia, not contra-indicated, should be tried. We recommend that the transfusion be repeated from time to time, as indicated, for permanent results.

The gastritis should have washes for the mouth, such as chlorate of potash and iodine; also peroxide hydrogen, hydrastine and listerine. Stomatic tonics for the dyspepsia.

Diet plays a large part and should be nutritious and given often in small quantities, such as milk, white of eggs; cracked ice with French brandy in sweet milk should be tried. By all means nourish your patient. Keep the patient out of the sunlight, and have the room cool, darkened and comfortable. In institutional practice, make the room cold with refrigerators arranged for this purpose. Nothing affects pellagra so favorably as cold. This fact is substantiated from the great improvement during the cold season; in fact, the cutaneous symptoms disappear and the patient to all intents seems to be recovered, but the disease returns the next spring or with the advent of the hot season. Frequent bathing should be resorted to. Keep the patient cheerful and restful at night if possible.

Mizell reports definite cures, without a single failure, with *"Calcium Sulphide,"* given in one-half to two-grain doses. We cannot vouch for this treatment, but it is worthy of a trial, as we believe it offers some inducement for a test. By far the most successful treatment thus far has been a change in climate. If the patients are able, send them to a cold climate by all means—a mountainous section—and allow them to remain until cool fall days have come. Taken in an incipient attack, we believe this method will meet with most satisfactory results and a permanent cure. We should be alert to every new symp-

tom and every new remedy that offers relief, remembering that leprosy has been with us for ages and still we have no positive cure; hence pellagra may prove as baffling, though we hope for a speedy relief from a disease that threatens to sweep our country, with dire results.

SUMMARY.

1. Failing to find any relationship between pellagra and syphilis we should never resort to the use of salvarsan or mercury in any form excepting small doses of "mild chloride."

2. Avoid all possible sources of infection, partake of no corn products, screen the room and bed where the patient stays.

3. Keep the patient in a well ventilated, but cool, dark room, with quietude surroundings.

4. Give calcium sulphide, hexamethylenamine, stomatic tonics, treat all cutaneous lesions as indicated for comfort and healing.

5. When possible, by all means send the patient to the mountains from spring until fall season.

With prompt and efficient treatment, the vast majority of incipient patients should recover, in my opinion.

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THE IMPORTANCE OF PURE FOOD.*

By L. W. JOHNSTON, M.D.,
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The human race during its slow and painful progress from the uncultured savage to civilization has depended almost entirely upon appetite as a guide in the selection of the amount and kind of food to be consumed.

In this heroic struggle, man needed a diet capable of maintaining his maximum strength, but often was fed in such a manner that not only was his strength seriously impaired, but disease and death found an easy prey in their ignorant victims.

Secretary Wilson undoubtedly correctly summarized the progress which has been made in feeding man by saying that the working man of today is better fed than was Queen Elizabeth three centuries ago. Only within the last century has the problem of nutrition been studied by the powerful and searching methods of modern science. Much progress has aready been made, but we are still very far from knowing with scientific certainty just what the ideal diet is.

We may confidently expect, however, with the present rapid growth of our knowledge of the functions of the food that within a decade or two the nutrition of man will be placed on a scientific basis. I do not mean by this statement that humanity, as a whole, will be living on the ideal diet. I very much fear that the determination of what such a diet should be is by far the easiest of the problems of nutrition which await solution. Before this ideal solution is reached a very large problem of education must be solved, namely, teaching the masses what constitutes the best and most nourishing food. A still more difficult problem confronts us in the production and distribution through commercial agencies of a pure and ideal food supply.

It requires an effort on our part to realize

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that food can serve but two functions in the human body. It can build up tissue and it can furnish energy.

Its value will be proportional to its ability to do these two things for us. It is true that our tissues are, in the main, built up by the protein or nitroglucous parts of our food while the energy we use is largely furnished by the carbohydrates, starch and sugar, as well as fats of our foods. The wonderful economy of the human system is shown by the fact that when any portion of the tissues is worn out and ready to be discarded, it is broken down in such a manner that its energy is liberated and made available for the activities of the body.

All of the food, therefore, which is assimilated ultimately gives up its energy to the human system. We can, therefore, use the amount of energy present in foods as a measure of their value to us. The simplest method of measuring this energy consists in converting it into heat which can be easily measured.

Taking up, first, the question of the nutritive value of foods as sold, we find a very considerable variation in some foods, while others are seldom or never adulterated. This is true of flour, sugar, fresh vegetables and meats. Other foods are continually and systematically adulterated so as to lower their food value. The extent of adulteration is in direct proportion to the market price of the particular foods, which makes it a vital problem in times of high cost of living. While much of the underfeeding of the poorer classes is due to such lowering of food values, a still larger amount is due to ignorance of how to spend money so as to get the greatest amount of nourishment for a dollar, as well as ignorance of such methods of cooking as will utilize to the best advantage the food which is purchased.

A still greater danger is found in the presence of actually poisonous substances in foods. They may be divided into two classes:

1. Bacteria.
2. Inorganic poisons, such as preservatives and coloring matter. Bacteria are probably the most dangerous of all impurities which are found in foods.

This is very strikingly shown in the case of milk.

The death rate of infants in New York shows that 20 per cent died of open-can milk. Oysters grown in contaminated water may produce typhoid and other intestinal diseases. Meats, vegetables and fruits, specially when eaten raw, may be contaminated.

The inorganic poisons which are introduced into food naturally fall into two large classes, namely, dyes and preservatives, and substances such as sulphuric acid, paraffine, clay, iron oxide, copper sulphate, etc. Of the aniline dyes only seven were found harmless, and these were not used by manufacturers. Copper sulphate is used to preserve the green color of canned vegetables. Formaldehyde is probably the most violent poison used. Digestion experiments show that formaldehyde hinders digestion by pepsin and trypsin, and in dilution of 1-1000 prevents action by rennin. It is well known that formaldehye hardens and renders insoluble such substances as albumin and gelatine. This action may account for its interference with digestion. These poisonous properties of formaldehye have been so generally recognized that its use in foods has been very generally condemned.

Hydrofluoric acid and fluorides, sulphurous acids and sulphites, borax and boric acid, salicylic and benzoic acids are also used. Substances have been selected as food preservatives on account of their ability to preserve the natural taste and odor of foods and not for their ability to prevent the growth of bacteria in general. In round numbers, the preserved foods can contain about four times as many bacteria as the unpreserved before seeming to be spoiled. A considerable amount of evidence has been produced to show that even in the absence of any specific disease germs the consumption of foods containing a large number of bacteria increases the death rate.

This has been repeatedly shown with public water supplies.

It would appear, therefore, that the use of preserved foods is a menace to public health because such foods may be consumed while swarming with bacteria. Another very important question is whether the use of preservatives renders it possible for manufacturers to use inferior or decomposed foods.

Taking human nature as it is, it would seem that the use of preservatives would not lead to the adoption of the most sanitary methods of handling foods. When we remember that bacteria will grow most luxuriously in the presence of preservatives, the foods handled in this way cannot but be dangerous to health. The sweets consumed by the children of the poor, while bearing the formula as prescribed by the pure food law, contain adulterating mineral substance. It is in the province of the teachers of domestic science in the public schools to enlighten their wards as to the danger lurking in the alluring contents of the candy counter.

Large quantities of scrap meat are treated with sodium sulphite, and sold in the poorer districts. Most of the flour, as used, is bleached with the oxides of nitrogen.

New processes of preparing foods are being introduced almost daily. The task of determining in each case whether the product is wholesome involves laborious scientific investigation. We cannot intrust this task to commercial agencies which are financially interested in the result. It must be undertaken and carried out by governmental agencies. This is possible only if such work is demanded by an intelligent public opinion.

New York is unquestionably in the lead as far as the work of the Board of Health is concerned. The control of the food supply of New York City is directed by the Board of Health, which, acting under the authority given it by law, has created various ordinances relating to the preservation of health of the people of New York City, and has incorporated them in the sanitary codes, enforced by the sanitary superintendent. Other ordinances particularizing and making specific this general ordinance have been adopted by the Board of Health among which those regulations relating to the foods sold in this city and their enforcement are interesting us this evening. A corps of inspectors carry out the work throughout the city, and make reports. The sanitary inspection is carried on by men appointed for that duty only. They are assisted by reports from food inspectors, who observe the condition of the shops and markets where they are examining the food suply. If the sanitary conditions are not what they should be the food inspectors make memoranda, to be handed to the sanitary inspectors for investigation. Especial care is taken where milk is sold to protect it from contamination. The same is true of all other foods. The question of food preservation is of vital importance to the welfare of the nation.

Hygienic measures are essential to protect food products from deterioration. Boron compounds have probably been more extensively used than any of the modern food preservatives. They are classed, however, by many food officials and the press as being poisonous substances, nevertheless they have been proven innocuous when used in the quantities necessary to preserve food. The danger from ptomaine poisoning has increased enormously since the enforcement of the law condemning boron preservatives, used extensively by the English in preserving cream and sausage.

Since the pure food law has prohibited the use of borax and boric acid, salt has been used instead. The advantage of boron compounds over salt for preserving meat is that one pound of borax or boric acid will preserve meat better than six pounds of salt, and boron compounds do not alter the flavor of the meat as salt does.

The surplus amount of salt in the system overtaxes the kidneys to remove it.

The pure food law, in enforcing true labels, has certainly protected the public from being

imposed upon by merchants, who would maliciously, with fraudulent intent and greed, reduce food values by adding cheap, inferior and sometimes deleterious substances. There is absolutely no evidence of boron preserved foods being injurious to the human system. On account of their mild antiseptic properties their use should be permitted on and in all articles of food that favor the propagation of all toxic germs, thereby protecting health and life by decreasing the enormous number of ptomaine poisoning cases. Laws should be enacted compelling their use and regulating the quality, thereby lessening the cost of meat, etc., and protecting instead of destroying health and life. This opinion of mine, however, is somewhat contrary to the platform adopted by the American Association for the promotion of Purity in Food Products, as adopted in New York City recently, and referred to in the next paragraph of this paper.

The recent convening of the American Association for the Promotion of Purity in Food Products in New York City is an epoch-making event in the history of pure food in this country. The sole aim of this association is the protection of the public by the abolition of chemical preservatives in food products. The results of the meeting were momentous and will be far-reaching in their effects. A platform was adopted declaring that chemicals are absolutely unnecessary in the preparation of any food products, that the only excuse for their use is to adulterate foods and conceal inferiority in the raw products and inadequacy of the process of manufacture; that chemically prepared foods are injurious to health, and that the legitimate element of the trade does not care to bear the stigma of putting out chemically treated foods, even though some of those men entrusted with the enforcement of the law should be able so to interpret it as to allow the use of chemicals.

As an indication of the progressive spirit of our times the agitation of any question relating to the public health receives sympathetic hearing, the people as a whole appreciating the value of sanitary precaution in promoting the welfare of the whole community as well as in the protection of the individual citizen. Such scourges as devastated cities and countries a few generations ago are impossible where modern sanitary regulations are enforced, but we are still subject to numerous smaller epidemics and individual cases of infectious disease, and our efforts are now directed toward bringing into control the many comparatively small unhygienic habits and customs in which we are still at fault.

Among the most important measures of preventive medicine, in any community, are those enforced regulations assuring it of the purity of its water and food supplies, nor can we be too careful in protecting these from possible contamination or adulteration.

Among other questions along these lines that of the propriety of exposing meats, provisions, fruits, candies, etc., which are being offered for sale outside of markets and stores has recently received considerable attention, and regulations have been passed by the health boards of some of our cities (Brockton and Haverhill) prohibiting such exposure, especially of cooked foods and of such articles as are commonly eaten without preliminary cleansing or cooking. The dust of city streets consists chiefly of dried and pulverized horse manure; it also contains sweepings from houses and stores, ashes and dried refuse material of a thousand varieties, and mention should also be made of dried sputum which may contain living tubercle bacilli.

Aitken's observations led him to estimate one cubic inch of air in the open country as containing 2,000 dust particles, and in a city 3,000,000. Loper, in his work in connection with the New York subway, found in New York streets that the average number of bacteria settling from the air in 15 minutes in a 3½-inch petri dish was 1,157. The average number obtained by filtering the air was 6,500 to one cubic centimeter.

Five times as many were obtained when

the wind was 18 miles an hour as when it was at nine miles.

The use of preservatives in food materials has engaged the attention of sanitarians for a number of years, and they have uniformly condemned the practice. Nevertheless, new and hitherto unsuspected uses of preservatives are discovered from time to time notwithstanding the laws prohibiting their use.

The plea of the manufacturers is that the use of preservatives is absolutely necessary to keep the food materials, and also that it is not harmful.

During the past ten years nearly all of the states of the Union have enacted laws which aim to prohibit the use of food preservatives. The national law of 1906 has served as a model for many of the state laws enacted since that time.

Dr. H. W. Wiley, Chief of the Bureau of Chemistry, United States Department of Agriculture, in circular 39 of that department, gives the results of experiments and the general conclusions drawn from them as to injurious effects of sodium benzoate as follows: From a careful study of the data in the individual cases and of the summaries of the results, it is evident that the administration of benzoic acid, either as such or as benzoate of soda, is highly objectionable and produces a very serious disturbance of the metabolic functions, attended with injury to digestion and health. As in the case of boric acid, salicylic acid and sulphurous acid, this injury manifests itself in a number of different ways, both in the production of unfavorable symptoms and in the disturbance of metabolism. These injurious effects are evident in the medical and clinical data, which show great disturbances of digestion, attended by phenomena, which are clearly indicative of irritation, nausea, headache, and, in a few cases, vomiting. These symptoms were not only well marked, but they were produced on healthy individuals, receiving good and nourishing food and living under proper sanitary conditions. It is not only fair to conclude, therefore, that under similar conditions of administration of benzoic acid or benzoate of soda in the case of weaker systems or less resistant conditions of health, much more serious and lasting injury would be produced.

It was also noticed that the administration of benzoic acid and benzoate of soda was attended with a distinct loss of weight, indicative of either disturbance of assimilation or an increased activity in those processes of the body which result in destruction of tissue. The production of a loss of weight in cases of this kind must be regarded as indicative of injurious effects. He concludes that in the interest of health both benzoic acid and benzoate of soda should be excluded from food products.

The evidences which scientific investigators have collected all show that the addition of chemical preservatives to food substances is injurious to the consumer in several different ways.

1. The use of preservatives permits the use of food substances that are of inferior grade or that are not perfectly fresh.

2. The food preservatives when taken into the body must be eliminated subsequently, this operation entails extra labor on special organ or organs, and this extra labor will sooner or later lead to direct injury.

3. Many of the food preservatives are direct poisons and their constant ingestion induces chronic poisoning with its concomitant effects.

4. The food preservatives have an antifermentative effect on the different digestive ferments, especially on trypsin and thus retard digestion and interfere with assimilation.

5. The food preservatives act on the food substances in such a manner as to render them less easily digested, or even wholly indigestible, and make it necessary for the body to deal with partly digested food or deprive it altogether of nutrition, especially of nitrogenous food.

6. In consequence of the use of food preservatives digestion and assimilation are interfered with, and the general nutrition of the

body suffers through organs that are overtaxed and injured in attempting to eliminate the poisonous chemical substances, and in attempting to deal with imperfectly split food substances that may be in such a state as to preclude their utilization, especially on account of lack of digestive ferments because of the loss entailed through the destructive action of food preservatives.

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VISCEROPTOSIS

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More than twenty-five years ago, Glenard, the father of visceroptosis, spoke these words:

"I can affirm," he says, "that the physician who will follow my directions and strive to verify my statements in such cases (meaning visceroptotics) will find in his practice the satisfaction which a *positive* diagnosis gives to both physician and patient, from which alone a proper prognosis can be made; and that satisfaction, the greatest of all, which directs the treatment and avoids for the patient the trial upon him of so many remedies, while at the same time it secures him relief and prevents the physician himself from falling into therapeutic skepticism."

These words are little short of prophetic, and are just as true, or more true, today than they were when uttered by Glenard, for the reason that the gauntlet now run by the poor patient is more thickly studded with pseudo-surgeons who stand ever ready to "anchor" everything "loose," even to the patient's morals.

The term first used by Glenard was *enteroptosis,* or a displacement of the intestine, his conception being that the *fons et origo* of the whole disorder was a sagging of the hepatic flexure of the colon. Starting with this theory as his foundation stone, he proceeded to weave, with enviable enthusiasm, a most elaborate superstructure, bringing into it that medley of symptoms and that peculiar physical form which today we recognize as characterizing the enteroptotic.

The term *visceroptosis* is a more inclusive one, and embraces within its compass a looseness or sagging of any viscus, either abdominal or pelvic; if, however, one cares to be more specific, this can be done by adding to the organ affected the word *ptosis,* as gastroptosis, nephroptosis, coloptosis, and the like.

Etiology.—The study of visceral ptosis, from an etiologic stadpoint, has provoked a variety of theories differing so widely that it is manifestly impossible to find one theory broad enough to explain all cases.

Stiller holds that it is a congenital anomaly; unquestionably, the factor of heredity plays a most potent part, and is not to be lightly dealt with. Noble, of Philadelphia, in his sweeping hypothesis of "hereditary hypoplasia," gives to the careful student much food for thought. According to his theory, this hereditary hypoplasia prominently manifests itself at or about the age of puberty—a time when the normal girl discards the characteristics of the neuter, or child, and assumes the form and figure of the essentially feminine. In

those cases stigmatized by this inherent tendency to a lack of development we find the age of puberty much delayed, the thyroid and mammary glands fail to develop, the hips fail to broaden. Not alone are these gross external features absent, but the uterus, with its ligaments and supports, the ovaries, the tubes and their ligaments, all, still bear the earmarks of the child; the cervix is long and presents the "pinhole os" of Marion Sims. In short, we see in this type of creature an absolute inability to respond, by a normal physiologic hypertrophy, to the first serious demand made upon it by nature. This developmental failure is not limited to the reproductive organs alone; it permeates every organ and every tissue of the whole being, because it is inherent and is an integral part of the fertilized ovum from which the creature had its beginning. That is to say, there is a general hypoplasia of the entire body—muscular, nervous, visceral.

Stiller has found that in from 80 to 90 per cent. of all cases a typical constitution of the patient could be found, being the anatomic substratum for the clinical symptom-complex designated by him as "congenital universal asthenia"—that is to say, a congenital constitutional weakness. We are able now to recognize this constitutional asthenia by the peculiar structure of the thorax and abdomen. The so-called "habitus enteropticus" is a true anatomic basis for the whole symptom complex. Given this type of woman, thus seriously handicapped by nature, and heap upon her the burdens of a strenuous and laborious life, the wear and tear of frequent child-bearing with its consequent relaxation of the abdominal musculature, and it is not difficult to picture the result as being a creature with a ptosis of every viscus within her abdomen and pelvis.

Further, a careful anaylytical study of the history, both personal and family (meaning by this that we delve deeply and painstakingly into the forebears of the patient) of a victim of enteroptosis, will often divulge facts of the first importance. It will be ascertained that such a sufferer is a member of a family in a period of involution, and that she is the luckless survivor, or at least one of the few luckless survivors of a family about to become extinct, and that there are present in her physical form unmistakable evidences of degeneracy and physical decline.

Keith takes the view—which, when carefully analyzed, has much to commend it—that enteroptosis results largely from a vitiated method of respiration, meaning that faulty movements of the diaphragm, resulting from various causes, as will be explained a little later, determine visceral ptosis.

Quite recently, Longyear, of Detroit, has presented a very attractive theory which seeks to explain these ptoses by a pull which is exerted primarily on the kidney, through the nephrocolic ligament, by the sagging of the large bowel. With this descent of the large bowel and kidney comes also an involvement of the duodenum, and subsequently the stomach. He also contends that the prolapse of the kidney is always secondary to a drop in the colon, for the reason that many cases show, with the radiograph, ptosis of the large bowel without kidney involvement, while, in no case, could a renal ptosis be demonstrated which had not also a coloptosis.

In order to gain a clearer conception of the general subject of visceroptosis, one must recall to mind the various factors which are instrumental in retaining the various abdominal organs in position. There exists within the abdominal cavitty a *definite hydrostatic pressure* which exerts a greater or less force in the maintenance of these various organs in their proper location. Should the dimension of this cavity be in any way altered, this intra-abdominal pressure likewise undergoes an alteration, and the organs are likely to yield to this decrease in pressure and sagging will be the consequence.

The effect of *posture* is probably of even greater importance than that of hydrostatic pressure. The upright position—that is, the one in which the body is made as tall as possi-

ble without rising on the toes—is the attitude in which there is least strain and is, therefore, the correct attitude. In such position the muscles of the trunk are in such balance that while the anterior and posterior groups are in slight contraction, none are strained, and but few of the ligaments are under tension. This holds true alike for all three of the important cavities of the trunk—thoracic, abdominal and pelvic. The heart and lungs are less incommoded, the anterior abdominal muscles are put on a stretch, thereby securing a tone which exerts an even pressure on the abdominal and pelvic contents, and thus tends to keep each viscus within its proper sphere.

If, therefore, the erect poise be the proper one from the viewpoint of economic functional efficiency, any marked deviation therefrom must, of necessity, produce disturbances in visceral support. If the body be habitually inclined forward, the chest is flattened above and the normal, free action of heart and lungs may be materially embarrassed. Thus it is that we most often find that in a patient who has the "habitus enteropticus' well established, there is a pronounced drooping of the shoulders, with a chest undersized, collapsed and flattened. The intercostal spaces above are widely separated, while the lower ribs are crowded closely together and slant markedly downward and inward, producing a very deep epigastric angle which is quite characteristc.

The capacity of the upper or thoracic abdomen bears an indirect ratio to the depth of this epigastric angle—that is to say, the deeper or more acute this angle becomes the less capacious will be this region. Indeed, the size and form of the thorax and upper abdomen as seen and estimated externally, serves as a fair index to the position of the abdominal viscera.

Further, it is but an easy corollary to trace how this sagging and giving away of the bony framework of the thorax will materially interfere with the proper functioning of that very important structure, the diaphragm. The drooping forward of the chest necessarily shortens the vertical diameter of the abdomen, with, as a consequence, an increase in the antero-posterior diameter and a stretching of the diaphragm, also antero-posteriorly, which produces a lowering of the dome or arch of this cavity. This is the mechanical explanation of Keith's theory of enteroptosis as being a vitiated method of respiration.

Again, let us trace the inevitable consequences which must, perforce, befall those abdominal viscera swung from and immediately adjacent to such a diaphragm—notably, the liver, stomach, transverse colon, duodenum and kidneys—more especially the right.

The concave lower surface of the diaphragm fits the upper convex aspect of the liver like the cover of a baseball, and just so much as the former is displaced, by just so much will the later be displaced. Hence, the frequent prominent anterior border of the liver in these subjects. It is easy to see also how such a displacement might, by the production of "kinks" in various portions of the bile passages, lead to bile stasis, infection and consequent cholelithiasis, thus adding a real pathological lesion as ground for explanation of much of the dyspeptic distress so often encountered.

The stomach owes its stability of position largely to the attachment of the esophagus to the diaphragm, plus its own mesentery, consequently a downward droop of the diaphragm produces the same effect upon the stomach. With this downward movement the chief sag takes place first in the lower or pyloric half of the stomach, this being the most dependent portion. Since, however, the possible downward movement of the pyloric end is limited by the firm attachment of the second and third portions of the duodenum—these, it being recalled, are retroperitoneal, and have but very limited motion—the amount of sag at the pylorus is not great, but the rest of the organ can sag downward to almost any degree. To permit this, the upper portion of the stomach, which is naturally the largest, becomes elongated and stretched, while the large or prominent part of the organ develops in the middle, or much lower down than is normal. As the

stomach elongates, taking with it the first, or movable, portion of the duodenum, we thus see that more or less angulation, or kinking, occurs in the duodenum which materially embarrasses proper gastric drainage. These factors, varying with the degree of elasticity of the individual observer's imagination, can explain as many or as few of the digestive ailments as he may see fit.

The whole of the small intestine, too, is forced downward by the displacement from above, and the circulation and innervation of this segment of the digestive tract is impaired, as well as the absorbtive capacity being seriously crippled.

With the large bowel somewhat similar conditions exist, but it must be remembered that usually the ascending colon has no mesentery from just above the cecum to the hepatic angle, where the transverse colon begins. This latter has a complete mesenteric covering which suspends it from the lower border of the stomach; at the splenic flexure it again loses its mesentery, becoming retroperitoneal as the descending colon. Thus it is seen that the large bowel is more or less fixed at the two points of angulation—that is, at the hepatic and splenic flexures, and that the transverse portion, attached to the stomach, will sag and droop just in proportion as the stomach does.

Here, again, we have the free movement of the fecal current materially hampered, and a ready explanation offered for the intractable constipation which usually marks these sufferers. It is by no means an unusual picture to find in these cases a transverse colon well down in the pelvis.

Numerous workers, experimenting with the X-ray in these cases by means of the bismuth paste meal, have been able to demonstrate not only the *transverse* colon, but practically the *whole of the large bowel,* occupying the pelvis, with, as may well be supposed, much kinking, crumpling and angulation of this bowel.

With this colonic and visceral descent (even though the nephrocolic ligament as described by Longyear, be not such an important etiologic factor as he would have us believe), together with a general disturbance of the intra-abdominal pressure, it requires no great stretch of the imagination to trace how the kidneys, too, might clamor for, and gain recognition in this general descensus. The right kidney suffers most often, for the reason that the tug and pull are exerted almost entirely on viscera with which it is most intimately asociated.

Symptomatology: Visceroptosis does not invariably give rise to symptoms, and we should clearly recognize the fact that enteroptosis and good health, as ordinarily considered, are not necessarily incompatible. We not infrequently see about us women of a very marked type who are apparently enjoying excellent health; they feel well, are free of pain, and are able to take their places in the social world.

Yet, while this may be true, it should likewise be remembered that the physical equilibrium and mental poise of these patients is ever an uncertain equation; overwork, frequent child-bearing, sudden severe shocks, unhappy domestic environments—any or all of of these—may serve to destroy the balance and to precipitate a frightfully complex medley of symptoms.

These symptoms are, as a rule, fairly well defined, though they may be as protean and as complicated as the manifestations of syphilis. Most often, those referable to the digestive and reproductive organs are most prominent, together with a train of greater or less length, largely psychoneurotic in character, such as vague and indefinite pain in the back, loins and groin; heavy, distressful feelings in the upper abdomen, and dragging, pulling sensations in the pelvis; constipation and flatulence also are rarely absent and are usually marked. Throbbing in the abdomen and aortic pulsation are often to be found.

The physical form, as a whole, gives very decided impression of weakness and frailness, and the facial expression oftimes bespeaks a 'neurasthenia basis." She (for these patients

are nearly all females) is slender and angular, with no compactness of form and with marked paucity of adipose tissue. The whole muscular system is poorly developed—flabby, flaccid and lax. These, as Smith very properly terms them, are fundamental characteristics. Associated with these one usually finds, also, the long, stringy neck with, as pointed out by Keith and Williams, a forward curvature of the cervical region of the spine—"ewe neck." There is a forward incline or drooping of the shoulders, with a chest undersized, collapsed and flattened. The upper abdomen is narrow, contracted and somewhat scaphoid, with the characteristic deep epigastric angle; the lower abdomen is often prominent, pouchy and relaxed, especially in multiparous women. Within this cavity, various degrees of visceral displacement may be readily outlined, the organs most often suffering being the stomach, colon and right kidney.

In the study of these cases one quickly comes to ask this very important question: What is the real relation between these demonstrable visceral displacements and the symptomatology presented? Truly, the thought lies near that a mechanical correction of these defects should at once relieve the situation.

Possibly so, if the relation of *cause* and *effect* could be clearly and uncompromisingly established. But is it not true that these poor sufferers often drift from one surgeon to another, each one finding some particular organ which if, in his opinion, is "tacked up," or removed, will bring to her that much sought for something—good health—a something which, by nature, she has never enjoyed, nor ever will enjoy. No surgeon can afford to draw hasty conclusions based on a superficial and perfunctory examination when a patient belonging to this class presents herself. A most careful and painstaking history—both personal and family—must be had, together with an exhaustive study of her physical frame. No less important than these, also, is to obtain a correct estimate of her mental poise, whether or not she is introspective, moody, melancholic.

After this has been done, the next question to be answered is: To what extent is this retroverted uterus, or this prolapsed kidney *actually* responsible for the symptomatic findings in this case? Is this woman, in truth, suffering from a *sore womb* or a *sore brain?* Not a few observers have tried to divide visceroptotics into two distinct classes—"congenital" and "acquired"—and apportion the treatment acordingly. That is to say, for the former, or congenital, type, the treatment should be medicinal and non-operative; while, for the latter, or acquired type, the treatment should be operative.

Yet, anyone who has given this subject much thought or study will soon conclude that such sharp lines of division are impractical and unsatisfactory, because of the apparent very frequent blending of both factors in the same individual.

If, after a careful weighing of all evidence which can be had, a logical conclusion can be reached that the displaced organ, or organs, are producing the symptoms, then the patient is entitled to and should have such operation as will restore them to their former natural position. Quite naturally, if the case is plainly one of acquired type—that is, due to the stress and strain of a laborious life and frequent child-bearing—then the results to be had from surgical interference will be most gratifying. In any case, these patients are, as a rule, of a nervous temperament, and should be safeguarded against every possible shock, both physical and mental. Of especial importance is it to see that the period of convalescence after an operation is properly conducted, and that they are not permitted to too soon take up the regular routine of their daily life.

THE CONSERVATION OF HEALTH

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Gentlemen of the Conservation Congress:

The greatest asset of a nation is the health of its citizens. Wealth in the abstract means nothing and presupposes as its postulate man to enjoy and profit by it. Whether one admits the existence of an Omnipotent Creator and Director of the Universe, or is pleased to believe that the created world, as man has found it, is the result of an unfathomable purposive design, the conclusion is inevitable either that the world was created *for man* or that he is the *summum bonum*, the *ultima thule* of development. We must accept this world with its overarching firmament and the earth beneath with its changing seasons, the nights and days, its flora and fauna of land and sea, together with its vast treasuries of minerals and chemicals, as being made by a beneficent Creator *for* man, or that development and purposive design have prepared for him a wonderful environment.

Not man for the environment, but the environment for man.

My own study of scientific literature and the physical testimony of the world, irrespective of any religious bias, convinces me that man is either the latest and highest product of an Omnipotent Creator or that his arrival on this stupendous plan of purposive development was, for him, most opportune Geology, like the Bible, leads us to believe that our earth, at first, was without form and void; that it was covered by water; that after a time stretches of land peered above the waters, barren of life at first, then occupied by vegetable life, then by animal life, then by man.

What happened in primitive days is still occurring now, but with less reckless selfishness on the part of the individual. When rude man lived to himself, with perhaps a mate and offspring, he had no sense of obligation other than providing for his own immediate needs; other indivduals and the future were left to care for themselves. Times of want and famine were not anticipated, the sharing of surplus with his neighbor not considered, and in consequence multitudes perished.

As he developed, however, he found that he could, by drying his meats in the sun, provide against a season when game was scarce; by tilling the soil and sowing seeds that he could grow and store foods which were not obtainable in winters of want; by combining with his neighbor and his neighbor's neighbor, that all these could be done more advantageously; and that by banding together these results could not only be better accomplished, but that they could more effectually protect themselves against the destructive effects of the elements and the invasions of their common enemies.

In time the value of division of labor dawned upon human kind and they found it not only to the advantage of the individual, but of the communities of which they formed a part, for certain individuals to perfect and devote themselves to certain vocations, thus perfecting and increasing the output of the whole, thereby developing shoemakers, clothesmakers, farmers, manufacturers and even priests, physicians, law-makers and bankers. In those days individuals often sacrificed the good of the whole to their own selfish ends, with more or less greed and wanton selfishness, and, be it admitted to our discredit, the same processes go on to-day and with less excuse.

Viewing these in the light of distance and of centuries of enlightment, we see their errors and condemn them as we do the mis-

deeds of our own contemporaries against their neighbors. An enlarged mental and moral horizon forces us to condemn such practices, and we can profitably accept the subtle lesson taught in Charles Lamb's delightful essay on roast pig: "It is not necessary to burn down a neighbor's house in order to enjoy a morsel of roast pig; dig a pit, use a few faggots of wood, roast the pig, but spare the house."

It would lead us too far to speculate as to what extent, under what duress, a man may utilize, even for a time, what should be left to his neighbor, his children or his children's children. It is, however, plain, even to those who think little, that we have received a generous benefaction from our ancestors, and that we should not only give as much as we have received to our descendants, but more. Every man is entitled to live, but not at the expense of his neighbor or posterity. Waste must inevitably harm an individual, a household, a state or a nation.

Education, the development of moral codes, the birth of religions and increasing density of populations have all conspired to teach us *altruism*. Man has learned that forests are purposeful; they please; they shelter; they influence the rainfall; they furnish wood with which to fashion our homes and supply our industries; but they cannot furnish us food to live upon, as does a field of corn or grain.

If the whole earth were a forest, *in an altruistic world* each man should be entitled to dismantle enough of it for his maintenance, but he should not destroy beyond this that which furnishes his neighbor with changing seasons, wood to cook his food and material with which to build his home; neither should he deprive posterity of these blessings. The same applies to streams and other of nature's bountiful benefactions.

Let me repeat—the conservation of all of these is good and should be taught our children, but for what? There can be but one answer—*Man*. If the whole world were a veritable garden of Eden, with all its indescribable beauties of vegetable and animal life, of what use would it be without man?

And so let me repeat that, while all conservation of forest and stream and wealth must be executed by man, it must still have for its objective *man*. In spite of wars, pestilences, famines and man's inhumanity to man, the world's population has been reckoned at approximately 1,750,000,000 souls.

It is conceivable that primitive man was free from disease, and that if he were injured, if not mortally, nature would effect a cure; but, with the multiplication of individuals, disease has developed and multiplied. At first disease was considered as an evidence of displeasure on the part of the deities or the Almighty, but education has taught us that it is due to our disregard and ignorance of the laws of health. Indeed, we have come to believe that *the civilization of a nation may be measured by its health standards*. The economic value of a forest is measured by the number of sound trees that it contains; every tree has its monetary value, and so for the human race.

Our government has seemed to go at this question backwards; it conserves its forests, its mineral resources, its lands, its streams, its animals; but man, for whom all these should be conserved, is, for the most part, neglected or left for the last consideration. Our government has its paternal care constantly directed over our streams, our forests, our mineral resources; but man, in matters of health, still lacks proper governmental supervision. It has always seemed to me remarkable that nearly all measures for the uplift of humanity, in matters of health, should have originated from the medical profession. If medical men were as black as some have painted them, they would spend their spare time in praying for epidemics rather than in preventing their development and spread.

It has been conclusively shown that in the United States approximately 1,500,000 are

constantly ill with preventable diseases. Irrespective of the heartache and the disruption of the homes, with often the loss of the paternal or maternal watch, care and influence, it means a monetary loss of approximately $1,500,000,000 annually to the nation; furthermore, that a large percentage of all of those who die are carried off by preventable diseases. The problem, therefore, which confronts us is: How may this fearful and, in part, needless loss be curtailed in our country? Any solution of this stupendous problem must be adapted to our form of government; for, after all, that is the main source from which we may expect relief. Our country, when in its infancy, like all young nations, was greatly in need of recruits in every department of life. Like all enterprises, in their beginnings, qualifications could not be too closely scrutinized.

The medical profession was no exception to this; so, with our latitudes of states' rights, it is no wonder that mushroom colleges of medicine sprang up in many if not all of the states.

This naturally led to the licensing of many men who were inadequately educated, and yet, in spite of this, I wish to call attention to the fact that at the present day—*and to the everlasting glory of the medical profession*—men can be graduated in the law and in the ministry, in the arts and in the sciences, in less time than it takes to be graduated in medicine.

In addition to this, the defects of medical training were pointed out, not by our government or the laity, but by the medical profession itself.

No relief being suggested by the states or the nation, the American Medical Association, an organization supported by the subscription of its members, took the matter up, as did Mr. Rockefeller and Mr. Carnegie, two philanthropists whose names will never die, with the result that now it requires graduation from a high school and four years of training in a medical college before a man is licensed to practice medicine and hold in his keeping the life of his fellow-beings. Previously to, along with and subsequent to this action, numerous states established State Boards of Medical Examiners to examine applicants to practice in their borders, all having for their object the protection of the public against incompetent practitioners.

I may add parenthetically that these have, for the most part, in every state, missed the game for which they were intended, for in every state law there seem to be flaws or loopholes through which the quack, the osteopath, the charlatan and the pretender may slip. Unfortunately, the medical profession is in the condition of the English jackey who was being whipped with a cat-o'-nine tails. In the midst of the process the man who was applying the "cat" said to him: "What are you laughing at?" "Why," he replied, "you are whipping the wrong fellow."

But to return to our problem: If we had any Augean stables we have cleaned them, and it remains for the public to support us, as it surely will.

There is not a man in the sound of my voice, I feel sure, who would not place implicit confidence in any serious statement that his family physician might make to him. Then why not accept the conclusions arrived at by these men collectively?

Charon's passage money—the death toll—is exacted largely by the preventable diseases. Smallpox, cholera and yellow fever have been banished as scourges from civilized communities, and by whom? The men whose private interests might have been fostered by the continuance of these epidemics that carried off their thousands and tens of thousands. Even while this is being penned we have assurance of the discovery of a cure for syphilis, a loathsome disease, formerly killing thousands, and leaving its blight upon countless innocents, which can now be cured by one, or, at most, two or more injections of a recently discovered remedy. The problems which still

confront the medical profession of America are still appalling. Malaria is prevalent over a large territory and cannot be exterminated for many years to come, perhaps never; our streams become polluted and carry typhoid fever from one state to another; tuberculosis, the great white plague, stalks from one border line to the other, recognizing no states' rights or territorial borders; pellagra touches with its blight the high and the low; and the hookworm, though threatened with extermination owing to the generous benefaction of one of the world's greatest philanthropists, still, like the wind, wanders whithersoever it listeth.

What can be done to stamp out these and other human plagues? There can be but one remedy—a National Department of Health.

In diseases which can travel from state to state, in diseases which can jeopardize the welfare of a commonwealth as a whole, *state lines should not be considered.* As a physician, as a descendant of a general in the War of the Revolution and of the Mexican War, as the son of an officer in the Lost Cause, as a Southerner throughout many generations in blood and sentiment, I am impelled, as any unprejudiced man should be, to accede to the axiom in the Scriptures: "It is better to pluck out an offending member than that the whole body should perish."

I do not wish here to be understood as decrying the value of municipal, county and state boards of health. They are phases in the devolopment of a perfected whole and should always exist; they subserve in greater or less degree the good of the communities in which they operate; but they should hold the same relation to a National Department of Health that our cities, counties and states do in our national form of government. In this way only can the interests of all be properly conserved.

So long as a city or county can control its health problems, the state does not essay to interfere; but when they, through inability, willfulness or ignorance, lose such control, then the state reserves the right to interfere, or, if you please, assist and direct.

This must of necessity be the province of a National Department of Health. State laws being at variance and legislators under one sort of influence or another, it is better to have sanitary laws enacted which can be enforced, irrespective of state and territorial lines.

As a nation we should be a unit in all things that pertain to the nation. We should know "No North, no South, no East, no West. Our Union forever, one and inseparable."

The only feasible way in which this can be accomplished is by yielding up our sentimental ideas of states' rights, which are and always should be a myth in things political affecting the nation as a whole as well as things medical.

The Committee of One Hundred has formulated sixteen succinct reasons why a Department of Health should be created. They are:

1. To stop the spread of typhoid fever through drinking the sewage-polluted water of interstate streams.

2. To enforce adequate quarantine regulations so as to keep out of the country plague and other similar pestilences.

3. To supervise interstate common carriers, in so far as, without such supervision, they prove a menace to the health of the traveling public.

4. To have a central organization of such dignity and importance that departments of health of states and cities will seek its cooperation and will pay heed to its advice.

5. To influence health authorities, state and municipal, to enact reform legislation in relation to health matters.

6. To act as a clearing-house of state and local health regulations and to codify such regulations.

7. To draw up a model scheme of sanitary legislation for the assistance of state and municipal health officers.

8. To gather accurate data on all questions of sanitation throughout the United States.

9. To establish the chief causes of preventable diseases and unnecessary ill-health.

10. To study conditions and causes of disease recurring in different parts of the United States.

11. To correllate and assist investigations carried on in many separate and unrelated biological and pathological federal, state and private laboratories.

12. To consolidate and co-ordinate the many separate government bureaus now engaged in independent health work.

13. To effect economies in the administration of these bureaus.

14. To publish and distribute throughout the country bulletins in relation to human health.

15. To apply our existing knowledge of hygiene to our living conditions.

16. To reduce the death rate.

The establishment of a National Department of Public Health has received endorsement in the recent national platforms of both the Democratic and Republican parties, the American Association for the Advancement of Science, the American Medical Association and the American Public Health Association, also the conference of State and Territorial Boards of Health and numerous other organizations, and I trust that before this meeting closes we shall do ourselves the credit of voting it our unanimous endorsement.

COMPLICATIONS AND SEQUELLAE OF MEASLES, BASED ON A STUDY OF 470 CASES.*

By THOMAS WEAVER, M.D.,
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The material for this paper was obtained from a study of three epidemics of measles at the Tennessee Industrial School, an institution with an enrollment of more than 750 boys and girls. The school is well situated upon ample grounds in the country, a few miles from the city of Nashville, and the general health of the pupils is exceptionally good. All three outbreaks occurred in the spring; the first two appeared in March, and the third in May.

My experience with these epidemics has so impressed upon me the gravity of measles when complicated with other diseases that I desire to call attention to some dangers incident to it.

Complications in measles vary both in character and frequency in different epidemics, though they are always more common in infants and young children, the great majority occurring before the fourth year (Holt). The frequency of complications is well shown by Barthey and Sanne, who met with them 1,044 times in 1,521 cases.

LUNGS.

Among the more serious complications of measles broncho pneumonia is by far the most important, both by reason of its frequency and its high mortality. It may be present at any period of the disease, but is usually seen either at the height of the attack or during the stage of decline. Most of my cases appeared after the eruption had begun to fade.

In institutions the mortality from broncho pneumonia may reach frightful proportions. In an epidemic of three hundred cases at the Nursery and Child's Hospital, all under three years, this complication occurred in 40 per cent of the cases, and of this number 70 per cent died (Holt), and in an epidemic at the New York Infants' Hospital every child under

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eighteen months had broncho pneumonia or croup, with a mortality of 80 per cent. (Crandall.) Gregory says that 9-10 of all deaths in measles are due to this complication, while Holt confirms the statement of Henoch that some pneumonia is found in every fatal case.

Both the mortality and frequency of this complication are found to vary in different epidemics. This was strikingly illustrated in my series of cases. In the first outbreak of 250 cases broncho pneumonia occurred only twice (4-5 per cent), while in the second epidemic of 95 cases it was present 10 times (10.5 per cent), and in the third epidemic of 125 cases it appeared five times (4 per cent), an average of 3.6 per cent. In the first series the mortality was 100 per cent, in the second 40 per cent, and in the third 20 per cent, an average of 41.1 per cent. The ages of these patients ranged from 10 to 19 years, which goes to show that in institutions broncho pneumonia with measles may be exceedingly fatal, even in older children.

In 2,477 cases of measles of all ages, collected by Holt, broncho pneumonia was present in 10 per cent; Bartez met with it in 68 cases out of 573 (11.9 per cent); Ziemssen and Knabler in 50 out of 311 (16.1 per cent), and Embben in 27 out of 461 (5.9 per cent). Brothers in 50 cases of different sequellae of measles found broncho pneumonia in 25 per cent.

The disease is characterized by a grave toxemia, due to the absorption of carbon dioxide gas, and to the products of bacteria, which find a fertile soil in the bronchitis accompanying measles. According to Dawson Williams, the bacteria found are the pneumococcus, streptococcus and staphylococcus pyogenus aureus. Von Jurgensen regards the broncho pneumonia that comes on during the active process of measles as generally of an acute variety, which is characterized by a wider range of consolidated patches, and resembles more nearly the croupous form. It is also marked by high fever and a rather rapid course. Those cases that appear after the acute stage has subsided, which are of a sub-acute or chronic type, he attributes to a secondary infection, of which the most important agent is the tubercle bacillus.

In its symptomatology, course and local signs broncho pneumonia, with measles, is not unlike the primary form of the disease, though Williams thinks it is more apt to be progressive. The onset of this complication is usually marked by an increased frequency of pulse and respiration, rise in temperature, greater penetration, and the presence of fine rales over the bases of the lungs posteriorly, with probably diminished resonance. The disease is almost always bilateral, though one lung may remain clear for several days, as was noticed in a few of my cases, but both lungs were finally involved in every instance. The onset may come on insidiously, and its presence may be unsuspected until the chest is examined. In such cases the rise in temperature is slight, and the pulse and respiration but little quickened, the rash has probably faded, the cough has diminished, and the patient is supposed to be almost convalescent, but for some reason his tongue remains furred, his appetite is poor, and he fails to improve.

Two types of the disease were noted in these cases. The early cases that appeared on the third, fourth or fifth day were characterized by high fever, very rapid pulse and respiration, with marked dyspnoea and cyanosis. The pulmonary lesions were very extensive, as evidenced by the abundant rales and dullness, respiratory effort was exceedingly labored, and the struggle of the little sufferers for air was most distressing. Death occurred in one case on the eleventh day, and in another on the twelfth day after admission to the hospital. The mind in these cases may remain clear to the end, which adds to the distressing features of the disease. The late cases that develop with the fading of the rash are of a more toxic form, the dysponea and cyanosis are less marked, the patient is dull and listless, and the course of the disease is more chronic.

A striking feature of these cases of broncho

pneumonia is the exceedingly rapid pulse, which may continue for days, and yet be followed by recovery. In one instance, a girl of 11, the pulse for several days ranged from 139 to 165, followed by recovery, and in a boy of 14 the pulse for thirty-six hours varied from 148 to 156, and he also recovered. There is surely no disease in which a child may be more desperately ill, and yet survive.

The discovery of broncho pneumonia in a case of measles (and especially if it be a frail child or one with tubercular tendencies) is ever a sign of grave import, and the result is always in doubt until the end of the attack, and even then a complete return to health is by no means assured.

LOBAR PNEUMONIA.

This form of pneumonia is rare in measles, though it is sometimes met with in older children. As a rule but one lung, or a portion of a lung, is affected.

Lobar pneumonia was found twice among my cases, and both of these occurred during the first epidemic. In one case the patient had been out of bed seven days, and in the other three or four days. In both instances only one lobe was attacked, and the course of the disease was mild and uneventful. Sometimes pleurisy of severe type is associated with pneumonia, and in such cases the prognosis is much more grave. In this type of pneumonia, and especially when accompanied by pleurisy, empyema is said to be of frequent occurrence.

LARYNX.

In every case of measles there is more or less involvement of the larynx, the lesions ranging from a slight catarrhal inflammation to extensive ulceration and necrosis. Holt states that a severe catarrhal variety is present in 10 per cent of all cases. Barthez and Rilliet found ulcers and erosions in nearly 50 per cent of cases examined at autopsy, and in about 20 per cent false membrane was present. It appears during the rash, or may develop in the second week. (Williams). Lesions of the larynx have been studied but little with the laryngoscope, though Gerhardt has observed ulcerations in the living subject. The vocal chords are quite often attacked, and Holt has seen them almost completely destroyed by a necrotic process when the remainder of the larynx was free from membrane. Unlike scarlet fever, membranous and catarrhal inflammations in measles are more often found in the larynx than in the traches. This is not always true, as the membrane may also be found in the mouth, nose and fauces. (Welch and Schamberg.)

Membranous laryngitis is ordinarily due either to the streptococcus or to the bacillus of diphtheria. The early cases that appear at the height of the eruption are sometimes due to streptococcic infection, while those that develop later are nearly always caused by the Klebs-Loeffler bacillus. (Holt.) The differentiation between the two forms of the disease can only be made by culture. Cases due to the streptococcus are almost always followed by broncho pneumonia, and the prognosis is therefore equally grave in both varieties of the disease.

According to Holt, the mortality from this complication in older children is second only to broncho pneumonia. It is particularly apt to appear in institutions, where it is, at times, terribly fatal. Out of 1,633 cases of measles in a hospital for children in Paris, Granlou met with membranous laryngitis in 235, and of this number but 17 recovered. (Welch and Schamberg.) Intubation and tracheotomy accomplish little in these cases, as broncho pneumonia is almost certain to follow, while tracheotomy is equally unavailing, for the membrane is very apt to form in the tracheotomy wound.

THROAT.

The tonsils may be greatly enlarged, but suppuration almost never occurs. Membranous deposits are found in two to three per cent of cases (Holt), though they are less frequent than in scarlet fever. Diphtheritic inflammation of the tonsils and pharynx may be present. It is usually found late in the disease. Streptococcic lesions are not generally

serious, though they may be as severe as in scarlet fever, and death from sepsis may result without reference to involvement of larynx. (Holt.)

DIGESTIVE SYSTEM.

Stomatitis.—A catarrhal inflammation involving the structures of the mouth is constantly present in measles, though it usually subsides with the disappearance of the rash. In debilitated children, especially in institutions, both aphthous and ulcerated stomatitis may occur, and oftentimes serious results follow. Ulcerated lesions are especially apt to appear in the furrow between the teeth and gums; they are also found on the gums, and on the cheek oposite the margin of the teeth. These lesions begin as white patches, which soon form ulcers that may become quite extensive, and cause large sloughs. The ulcerations ordinarily heal during recovery from measles. The pain and discomfort of these ulcers at times interfere with eating, and the nutrition of the child suffers, while in neglected cases healing fails to take place, and they become chronic. A still greater danger is secondary infection, the soil being rendered especially favorable for bacterial growth by the inflammatory process. Ulcerative stomatitis was present but twice in all of my cases, both of which occurred in boys of exceedingly low vitality, one of whom was afterwards found to have hookworm disease of rather severe type. The lesions occurred on the lips and in the sulcus between the lips and the gums, and though not extensive, healing was quite slow.

It is somewhat surprising that this complication occurred so infrequently in so large a number of cases, and especially in an institution where there were so many cachectic children. This was perhaps in a measure due to the routine use of mouth washes.

NOMA.

Noma is a rare complication of measles but one of the most dreaded. This frightful affection seems to bear a close relation to measles. Welch and Schamber state that one-half of the cases reported have followed this disease, while other writers agree that it is more frequent after measles than any other form of illness. It is due to a secondary infection of unknown origin. This complication is only met with in debilitated, poorly nourished children, and never in those who have formerly been healthy. It appears during the decline of the rash, and is almost invariably fatal, the mortality being about 70 per cent. (Welch and Schamberg.)

DIARRHOEA.

Diarrhoea occurs quite frequently with measles, especially in children under two years. It is met with in all varieties, from a mild catarrhal enteritis to the gravest form of ileocolitis. It is most often seen in the summer, when it may prove very fatal. "In India and other hot countries," according to Gregory, "thoracic complications are rare; diarrhoea and dysentery prove the usual and troublesome sequellae." (Welch and Schamberg.)

In the beginning of the rash mild attacks of diarrhoea are not unusual, and cause little disturbance. The severe forms begin at the height of the disease, or during the stage of decline. Typical choleraic enteritis may occur, or if the lesions be in the large intestine it assumes the character of dysentery. In severe epidemics diarrhoea may cause death in adults, even in winter. (Thomas.) Diarrhoea is said to be a grave and frequent accompaniment of broncho pneumonia in measles. (Hardaway.) It was present in rather a severe form in one of my fatal cases of broncho pneumonia. Several other attacks of diarrhoea occurred among my cases but they were all mild.

NERVOUS SYSTEM.

Complications involving the nervous system are rare in measles, though numerous lesions of the brain, chord and peripheral nerves have been reported.

CONVULSIONS.

In severe cases of measles convulsions may occasionally appear at the onset; when found

later in the disease they usually accompany such complications as meningitis, otitis, or grave forms of broncho pneumonia.

MENINGITIS.

This rare affection usually comes on as a sequel rather than a complication; both the simple and tubercular form may occur. Meningitis was twice present in my second epidemic. In the first case, a boy of 15, measles was preceded by rotheln, this disease also being epidemic in the school at the time. There was nothing unusual about the measles though the temperature was high, but after the rash had faded and the fever had nearly disappeared, the temperature again rose, pain appeared in the side, and an examination of the chest disclosed the presence of broncho pneumonia. The attack was milder, and ran a much shorter course than is usual in this complication; the temperature again returned to normal, convalescence seemed to have begun, when pain developed in the left ear, accompanied by a slight rise in temperature. Treatment of the ear was promptly begun, the drum membrane was incised, but without improvement. The fever rose higher, the boy continued to grow worse, and in a few days symptoms of meningitis were manifest, followed several days later by convulsions, which quickly terminated fatally, death occurring on the thirtieth day from the date when he first came under treatment for measles.

The second case, a boy of 16, a typical tubercular subject, had measles of ordinary severity, which ran an uneventful course. The rash faded, the appetite returned, the chest was free from rales, but the cough and fever continued. This condition remained almost unchanged for a few weeks; the appetite was excellent, repeated examination of the chest showed no rales; there was some cough without expectoration; he slept well at night, but the irregular fever remained. He then began to fail, the cough and temperature increased, the appetite was not so good, and later there was severe frontal headache, with vomiting, which was soon followed by other meningeal symptoms, and he died in coma on the sixty-sixth day after admission to the hospital.

INSANITY.

In several instances measles have been followed by insanity, usually some variety of mania or dementia. In an epidemic of measles in an institution Smith and Dabney found insanity three times in 108 cases, all of which recovered.

EPILEPSY AND CHOREA.

Epilepsy and chorea have, in rare instances, been met with as sequels of measles. McKenzie, in a study of 439 cases of chorea, found 49, of which 32 were unassociated with any other disease save measles, and the remaining 17 were preceded by measles and anaemia alone. (Dawson Williams.)

PARALYSIS OF CEREBRUM AND SPINE.

According to Donkin, there is a seeming connection between measles and paralysis, though most writers consider it an infrequent complication of this disease. In 41 cases of paralysis collected by Allyn, 35 were due to lesions of the cerebrum. This form of paralysis usually comes on suddenly, and is very often accompanied by convulsions. It may begin with dullness or coma, when convulsions are absent. (Welch and Schamberg.) Paralysis of spinal origin is unassociated with convulsions or coma. Allyn states that paralyses develop, as a rule, during convalescence, generally within the first three weeks from the beginning of the attack. There were four deaths in this series. Several of the cases were followed by incomplete recovery, and aphasia and muscular atrophy were present some years later. (Welch and Schamberg.)

HEMIPLEGIA.

In 120 cases of hemiplegia in children collected by Osler there were four following measles, and Gowers met with it as a sequel of measles in 7 out of 80 cases. (Williams.) It occurs both during the acute stage and in convalescence. Convulsions have preceded the hemiplegia in most of the cases reported. The outlook is more grave when this complication appears during the height of the dis-

ease. Recovery from measles may be followed by marked improvement in paralysis, though full recovery is not the rule. The paralysis usually remains to be followed later by a lack of development in one or both limbs, rigidity, and an increase of deep reflexes. (Williams.)

Tetany, muscular atrophy and paraplegia have, in rare instances, been associated with measles.

Dawson Williams mentions a form of paralysis very like that found in diphtheria, which has been present as a complication of measles. In eight cases cited by Barthez and Sanne in which diphtheria was fully excluded, there was a paresis of the tongue, soft palate, pharynx and cervical muscles. The symptoms appeared early in the attack in half the cases, and in the other half they came on three weeks after measles. Recovery in three to twenty days followed in each instance. Death from respiratory paralysis has occurred in these cases. Williams thinks this form of paralysis is due to a multiple neuritis.

DISSEMINATED MYELITIS.

Cases of disseminated myelitis occurring during an attack of measles have been reported by several writers, notably Barlow, Williams and many others. In Barlow's case, which appeared early in the disease, death occurred in the acute stage, and an autopsy was held. Williams' case came on with convulsions on the fourth day of measles, and four weeks later there was dullness with difficult swallowing and inability to sit up, though the limbs were feebly movable. Improvement was slow, and recovery was not complete at twelve years. Williams thinks it quite likely a disseminated myelitis is responsible for such symptoms as stupor, paralysis and lack of control of the sphincters, which have come on in the acute stage in cases of measles, and were followed after recovery by permanent signs suggestive of a disseminated sclerosis. The disseminated myelitis he believes is due most probably to a specific toxemia. This opinion is confirmed by the finding in Barlow's case, which showed that the lesions of the chord were plainly of vascular origin.

EARS.

The frequency of otitis as a complication of measles is exceedingly varied. In some epidemics it may be quite prevalent, while in others it may be rare, or absent entirely. In an epidemic of 60 cases in the School for the Blind at Nashville, Crockett found otitis in 20, all of which were mild. In my first epidemic of 250 cases otitis was present three times, once in a boy who had an attack every winter; in the second epidemic of 95 cases it was seen twice, and in the third epidemic of 125 cases otitis did not once occur. In each case only one ear was involved.

In 16 fatal cases of measles Bezold found the ear involved in all, and Tobeitz's findings were similar in 22 cases that were examined postmortem. (Welch and Schamberg.) Otitis was found in 19 out of 22 fatal cases cited by Koplik, and of this number only seven presented symptoms during life. The otitis accompanying measles is generally of the catarrhal variety, and is considered by Bezold and Tobeitz to be a local manifestation of the exanthem, and not a secondary infection. It occurs early in the disease, and both ears are usually affected. In a case that died twenty-four hours after the development of the rash Tobeitz found the ears implicated. (Welch and Schamberg.) This form of otitis is usually mild, and perforation of the tympanum does not ordinarily take place. In the cases examined by Bezold the streptococcus was present in one-half, and the staphylococcus aureus and albus were found in the others. (Welch and Schamberg.)

The otitis that comes on later in measles, usually toward the end of the second week, is generally of the purulent form, and is much more likely to end in perforation of the drum. This variety is due to secondary infection from the naso-pharynx. (Welch and Schamberg.)

Both Downing and Williams state that

chronic laryngitis and adenoids predispose to otitis in measles, though this is, of course, likewise true of primary cases.

Many instances have occurred in which deafmutism has resulted from otitis in measles. In 1,140 case collected by Kerr, Love and Addison from institutions of Great Britain, loss of hearing in 138, or 9.8 per cent, was due to measles. In American institutions, of 1,673 acquired cases, measles was responsible in 52, or 3.1 per cent, and 84, or 4.2 per cent, out of 1,989 acquired cases on the European continent, were due to the same disease. (Welch and Schamberg.)

Necrosis of the ossicles, or other bones of the canal, may result from grave forms of otitis. According to Burkner, "an invasion of the labarynth by cocci, causing necrosis, has been repeatedly demonstrated of late." The lesion results in a very serious loss of functional power. (Welch and Schamberg and von Jurgensen.)

In 501 cases of disease of the tympanum in children Downey found 131, or 26.1 per cent due to measles. Otitis as a complication of measles is considered less serious than when found with scarlet fever, yet in this series only 63, or 12.6 per cent followed scarlet fever. (Welch and Schamberg.)

The symptoms of otitis in measles are less marked than in scarlet fever, and oftentimes they are quite obscure, particularly in young children. Loss of hearing or tinnitus may indicate closure of the Eustachian tube; ear symptoms, on the other hand, may be absent, and the only signs are "increased restlessness, grinding of the teeth, sudden cries, and perhaps delirium." A rapid increase in fever, which ordinarily accompanies these symptoms, should at once direct attention to the ears. (Williams.)

EYES.

Both Comby and Von Jurgensen have emphasized the importance of careful attention to the eyes in measles, since a catarrhal inflammation of the conjunctiva is always present and when neglected may be followed by serious consequences. In cachectic children severe inflammation of the conjunctiva, accompanied by marked swelling and profuse discharge may be seen. Ulceration of the cornea, with perforations, has been observed in bad cases, followed by a panopthalmitis, which may result in the loss of the globe, as in the case reported by Brothers.

In my epidemics the eyes received constant attention with the result that we had little trouble from this source, save in a few cases of chronic conjunctivitis which were aggravated by measles.

The bacteria found in the discharges from the eye in measles have been studied by several investigators. Giarri and Pichi have isolated from the eye and bronchi in measles a bacillus very similar to the influenza bacillus of Pfeiffer. Morax found the same bacillus in a case of conjunctivitis in measles in which the eye was normal prior to the attack. The same observer has in like cases twice found the Koch-Weeks bacillus, and in one instance the diplococcus, which gave rise to severe secondary conjunctivitis. In 26 cases of measles studied by Morax genuine conjunctivitis was present in 22, and the bacteria isolated were the normal saprophytes of the conjunctiva. He did not determine whether it was due to a specific infection. (Quoted by Schotteleus.) In 80 cases studied by Schotteleus, 40 of which died, the staphylococcus aureus was present in 60 per cent, and the strephylococcus in 14 per cent. The strephylococcus was isolated from the very severe cases alone. Schotteleus found the strephylococcus in 50 per cent of the fatal cases, which he considered an indication of the apparent relationship between this micro-organism and the severity of the disease.

LYMPH NODES.

A silght involvement of the lymphatics is normal in measles, though at times there may be considerable enlargement, and suppuration may occur. The cervical glands are especially apt to be affected, and the tracheo-bronchial nodes are likewise involved. The enlargement

may remain for months, and may finally become tubercular. Symptoms are usually lacking, and the lymphatic disturbance is chiefly entitled to notice because of the tendency to tuberculosis, which is especially true of the bronchial glands. The parotids have, in many instances, become affected, and several observers have reported cases.

KIDNEYS.

Renal disease is generally considered a rare complication of measles, though a number of cases have been reported in which death resulted from uremia. Holt states that a transient albinuria is not infrequently met with, but he has never seen a severe nephritis in measles, either clinically or post mortem, and he has found but few cases in the literature. Babinsky thinks that nephritis would be more common if the urine were examined more frequently. M. de Biehler, of Paris, (J.M.A., Dec. 25, 1909) found nine cases of pyelitis or pyelo-nephritis in 147 cases of measles, and albuminuria in 59 others. She also found nephritis in another mild case of measles. Eight of her cases were girls, and the kidneys of all were known to be healthy prior to the measles. Recovery took place in six weeks, though there was a recurrence in one case, following an attack of scarlet fever.

HEART.

ENDOCARDITIS.

Hutchinson found four cases of organic mitral disease which appeared during attacks of measles, and Cheadle mentions two cases noted in the autopsy records of the Great Ormond Street Hospital. (Welch and Schamberg). Sansom considers that measles plays a more important part in the production of endocarditis than is generally believed, though this opinion is not concurred in by most observers, who hold that it is a rare complication of this disease. (Welch and Schamberg.)

PERICARDITIS.

In the opinion of Autenrieth pericarditis is not infrequent in measles, though it is generally considered rare. (Welch and Schamberg.) Cases have been reported by a number of writers. It is usually met with in cases of pleuro-pneumonia. (Welch and Schamberg.)

SKIN.

Lesions of the skin are often met with as complications of measles. Herpes facialis may be observed in the early stages, and urticaria may also appear both early and late. (Welch and Schamberg.) Bullous lesions have been reported by several observers. Henoch saw a case in a girl of four, in whom blebs appeared on the third day. In this case almost the entire surface of the skin was implicated, and death from pneumonia occurred on the eighth day. Four cases were observed by Steiner in the same family. The blebs, which ranged in size from a pea to a pigeon's egg, were in crops, and were found on the skin and mucous membrane. Fever was present, and the lesions appeared before, during or after the rash of the measles. (Welch and Schamberg.) Carl Leimer also had four cases of pemphigus contagiosus, which occurred in children with measles.

Gangrene of the skin, genitals and cartilages of the ear and nose are not infrequently observed after measles. Scarlatinous erythema has been reported by Meyer, and a similar condition resembling acute lichen was observed by Hoffmeister and Hauner. Thore has seen pustules of ecthyma, and Salzman has observed cases of impetigo and urticaria. (Thomas.)

PURPURA.

Masarei mentions eight cases convalescent from measles, who developed fever, dropsy without albumen, and scurvy, chiefly purpuric in type, all of whom died. (Welch and Schamberg.)

JOINTS.

Lesions of the joints have, in a few instances, been found in measles. In a case reported by Darnall and Townsend arthritis of both ankles and one knee appeared in a baby of eight months after measles. Suppuration occurred in the knee joint, and operation was followed by death from exhaustion.

PREGNANCY.

The studies of Cerf show that measles is exceedingly dangerous in pregnancy, abortion occurring in 60 per cent of the cases observed. The danger of abortion increases with the advancement of pregnancy, and after the 7th month miscarriage took place in 80 per cent of the cases. Measles has caused death during the puerperium. In Cerf's cases post partum complications were absent. (Ruhrah.)

PERITONITIS.

Dawson Williams states that ascites, presumably due to a sub-acute peritonitis, of unknown origin, has occurred with measles. These cases have generally been found in girls. The fluid is finally absorbed, though it may remain several weeks, and cause marked abdominal distention. A case of peritonitis following measles has been reported by Hicks, of Boston.

The question occurs, are not these cases of tuberculous origin from infection through the mesenteric glands?

VULVITIS.

In 715 cases of measles treated in an isolated pavillion, Comby found vulvitis in 25. This complication is not infrequent in measles, and Comby thought that the small number among his cases was due to the use of antiseptic douches. (Welch and Schamberg.) Vulvitis usually appears early, and is accompanied by considerable pain and swelling, with a mucopurulent discharge, and painful urination. The swelling may be marked, and ulceration may occur, or even gangrene. These cases may become chronic, and continue for months. (Williams.)

There were no cases of vulvitis in my epidemics, but I once saw a case with measles, in a previously healthy infant of three months, in a day home for children. There was redness, and a discharge, but little or no pain, and recovery took place promptly after treatment.

EPISTAXIS.

This complication is not infrequent during the prodrome and the rash. It is rarely dangerous, but may become serious. Several cases occurred in my epidemics, but they were all slight.

ROUND WORMS.

The passage of round worms was noted four times in my epidemics. In one case the worm made its exit from the nose, and in another instance it was expelled by vomiting. Febrile disease is said to cause migration of the ascaria lumbricoides, which explains the passage of the worms in these cases. (Dock.) Similar cases have been reported by Rilliet, and by Mombert and Michel. (Thomas.)

OCCURRENCE OF MEASLES WITH OTHER INFECTIONS.

Measles is very often complicated with other infectious diseases, such as scarlet fever, diphtheria, smallpox, and especially pertussis, with which it is more often seen than with any other disease. In such cases measles may occur as the primary or secondary disease. According to Welch and Schamberg the prognosis is rendered more grave when measles occurs as the secondary disease than when it appears as a complication of another disease. In most cases the secondary disease comes on during the decline of the primary affection.

During my second outbreak of measles an epidemic of German measles prevailed in the school at the time, and in a great many cases one disease followed the other in quick succession. In several instances the two exanthems appeared to develop simultaneously, though this fact could not be definitely determined. In a majority of the instances one disease appeared upon the decline of the other. No complications were observed with rubella, and the course of neither disease was seemingly influenced by the presence of the other.

SEQUELLAE.

Among the sequellae of measles tuberculosis stands pre-eminent. It is found both as a complication and a sequel, but it more often occurs as an after effect of measles. The frequent association of tuberculosis and measles has attracted the attention of many observers, and it is generally accepted that there is an

intimate relationship between the two diseases. The prevalence of tuberculosis after measles, like other complications and sequellae of this disease, is exceedingly variable in different epidemics. According to Bartels and von Jurgensen its frequency ranges from 5 per cent to as high as 16 per cent in some epidemics. In rare instances it may be present as a complication in the acute miliary form, when death occurs in a few days or weeks. In such cases the lesions are usually found in the lungs and meninges, the onset of the disease being characterized by a severe bronchitis. My second case of meningitis heretofore described was unquestionably an instance of this kind, for though there was no autopsy the clinical course was clearly that of an acute miliary tuberculosis, with secondary involvement of the membranes of the brain. At other times it may be met with in the form of a broncho pneumonia, generally of a sub-acute or chronic variety.

Tuberculosis in the great majority of cases develops as a sequel of measles, the lesions appearing in the lungs, glands and bones. Holt says that among the late expressions of the disease involvement of the bones, especially hip joint disease, and caries of the spine, are the forms most frequently seen.

Infection with the tubercle bacillus usually takes place in one of two ways. (1) It may result from the lighting up of an old tubercular lymph node, especially in the thorax, or a latent lesion in the lung; or (2) it may occur as a primary infection from without, the bronchial mucous membrane being rendered especially favorable for bacterial growth by the catarrhal process of measles.

The effect of measles upon a child of tuberculous tendency, or one with a latent lesion, was strikingly shown in three of my cases. One of them has already been mentioned. The other two were in a boy of 19, and a girl of 17. In both patients tuberculosis had for some time been suspected, but repeated examinations of the chest failed to disclose physical signs. The boy had measles accompanied by broncho pneumonia, which left him with a cough, and in a short time afterwards evidence of tuberculosis appeared in the lungs, and bacilli were found in the sputum. This case left the school, and when last heard from he was living in the mountains, and was said to have made some improvement. The girl failed rapidly after measles, though hers was an uncomplicated case, the cough continued, she lost flesh, fever appeared, followed by rales and dullness, and she died within less than a year from pulmonary tuberculosis.

But it is not alone the latent cases and those with tuberculosis antecedents that develop tuberculosis as a sequel of measles, for it is a well recognized fact that measles may be followed by tuberculosis in children previously healthy, and free from tuberculosis taint. This was vividly illustrated in the case of a girl of 16, of fine physique and color, whose health was excellent prior to measles. The girl menstruated during the attack of measles but never afterwards, and her health was not regained. She gradually declined in strength and flesh, and cough, accompanied by temperature and sweats appeared. It was difficult to believe that this large, well developed girl could be tuberculous, but rales were found in the chest, and bacilli in the sputum. She continued to grow worse, and death from pulmonary tuberculosis took place in about 18 months after the attack of measles. These cases aptly illustrate the truth of Holt's statement that "An attack of measles in a child of tubercular antecedents should always be looked upon with apprehension."

BRONCHITIS.

In two of my cases—one a boy of fifteen, and the other a girl of seventeen—measles was followed by bronchitis, accompanied by a cough and fever, which persisted for several weeks, but was finally followed by recovery in both instances. The boy had cough and fever, and remained in bed from May 29th to July 2d, and the girl's cough and fever lasted from July 5th to August 1st. The girl coughed incessantly, and was greatly pros-

trated, and tuberculosis was strongly suspected, but she finally grew better, the cough lessened, and her temperature gradually disappeared. Her convalescence was very slow, but her health was ultimately regained.

Other lesions of the larynx and trachea may remain after measles. Ulcerations of the larynx are considered by Loeri to be especially dangerous, as such subjects are very apt to become tuberculous. Bronchitis that persists after measles may continue for an indefinite period, as was well shown by the two cases cited. Broncho pneumonia always continues after the decline of measles, according to Hardaway, and it may cause death months afterwards. Chronic coryza may also be found as a sequel.

CHRONIC AFFECTIONS.

The eye is not infrequently the seat of chronic lesions following measles. Michele mentions under this head chronic diseases of the lids, cornea and conjunctiva. (Hardaway.) Affections of the ear may also occur. Various skin lesions, such as furuncles, abscesses, pustular lesions, and gangrene may be present.

Roger has reported four cases of erythema nodosum occurring after measles. (Welch and Schamberg.) There were also four cases of this disease that followed my last epidemic, all of which occurred in boys of fifteen or sixteen. The lesions were seen four, eight and ten days after the patients left their bed. In one case, in addition to nodes on the legs, there were maculo-papular lesions over both malar bones, erythematus patches on both sclerotics at the inner canthi, and a small one on the nasal septum. This case was characterized by pain and tenderness over the limbs, and a temperature of eleven days duration, which reached at one time 103 1-5 degrees F. The pain and redness subsided in a few days. In another case there was headache two or three days, followed by nodes on the shins, and fever which reached 103 4-5 degrees F., and continued fourteen days. In a third instance pain and tenderness in the joints and legs was so great that the boy could scarcely walk. Temperature in this case continued only a few days, and the pain and tenderness subsided with the temperature. In the fourth case, the temperature did not go higher than 100 1-5 degrees F. There was but one node on each shin, and the case was generally mild. Nodes were present on the shins in every instance, and in some cases on the arms also, and all were quite painful. The pain was invariably relieved in a few days, but the nodes always remained several days longer.

EFFECTS OF MEASLES ON OTHER DISEASES.

The effect of measles when engrafted upon other diseases has claimed the attention of many writers, and numbers of cures of various affections have been attributed to it. Thomas says that diseases which are frequently met with in measles, such as pneumonia, bronchitis and tuberculosis, are made worse, and affections of the alimentary tract, especially during dentition, are apt to cause diarrhoea. On the other hand, affections which are not often found as complications may be benefited by measles. According to this author Behrends saw chronic eczema of the scalp of three years standing cured after measles; Barthez and Rilliet observed chorea, epilepsy, and incontinence of urine of several months relieved by measles; Weisse mentioned a girl whose convulsions ceased entirely following measles. Schmidt cites the case of a girl of six who had numerous convulsions of daily occurrence, and whose condition was considered hopeless, who became entirely well after measles. He also treated a boy for contractures of the lower limbs of six months duration, who made a complete recovery following measles. Mombert and Schroder von der Kolk report a case of a woman insane 5 years, with violent attacks of mania, which did not recur after measles, and she was soon discharged from the asylum as cured. Diseases of bone were also improved in several cases. These instances, however, are to be regarded merely as accidental cures which might have followed other acute diseases.

COXA VARA: The Report of a Case.*

By WILLIS C. CAMPBELL, M.D.,
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Chronic affections of the hip were at one time considered either "rheumatism" or tuberculosis, and at present the profession is prone to treat any long continued inflammatory joint which does not respond to treatment in a reasonable time as tubercular. Coxa Vara gives a combination of symptoms which for many years was not differentiated from tuberculosis of the hip, though the condition was described by Roser in 1843, but it was not until Muller, in 1889, set forth the classical symptoms and physical signs that it has been recognized. The normal angle between the neck of the femur and the shaft ranges from 120 to 140 degrees. If above 140 the condition is known as Coxa Valga, if below 120 Coxa Vara, which is brought about by the weight of the body on defective bone, the neck of the femur being gradually depressed until an angle of 45 degrees may be formed with the shaft. Tuberculosis, osteomyelitis and traumatic injuries do frequently cause the neck to bend downward on the shaft, forming an acute instead of the normal obtuse angle, but are so widely different in their manifestations and distributions as to be excluded from any detailed description of true Coxa Vara.

The affection is probably rare in native-born Americans, for there has not been to my knowledge a single case reported in the medical societies of my section. During my service in the clinics and hospitals of New York City I observed that all cases were aliens, while in the European clinics the percentage of Coxa Vara was greater, which is probably due to the low standard of living in those countries.

Little opportunity is available for the study of the pathology, as there is no mortality and no occasion for autopsy, consequently there has been much speculation regarding the cause. At least one-third give a history of ricketts. Late ricketts is sometimes associated, and some observers give localized ricketts and osteomalacia as etiological factors. According to my own ideas, there is little reason to presume that a general nutritive disorder will confine itself to a special area. We know that there is no bone in the body that receives so much weight on its oblique axis as the neck of the femur, which, under normal circumstances, is a common location for traumatic injuries, and naturally the point of least resistance in any affection of the general skeleton.

There are two distinct types as regards location: Epiphiseal and cervical. The former is due to a separation of the epiphisis, and according to Lorenz and other observers, constitute all cases not caused by active ricketts, but this is not always borne out by the X-ray.

Coxa Vara occurs more frequently in boys than girls, and by far the largest per cent is seen at or near the age of puberty, when the generative and other organs having size and functions to meet the demands of the child are required within a comparatively short space of time to do the work of the adult. Growth is rapid and nature is taxed to the limit in perfecting the more vital centers for their part in the physiological cycle, and it is not remarkable that this is a popular period for such irregularties as chorea, hysteria, the relapse of old tubercular foci, chlorosis, and it is possible that nature may occasionally neglect the skeletal system when the point of least resistance would obviously be the first and often the only place to show change. The weight of the trunk rapidly increases at this age, and if the bones have not proportionately gained in strength, there is increased weight on weakened tissue, with the inevitable result—a giv-

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ing away at the most vulnerable point.

The anatomical relation between the neck and shaft of the femur, as stated above, may be an angle as acute as 45 degrees in severe cases, so that any attempt to abduct would force the trochanter against the pelvis. A backward inclination of the head with anterior bowing is usually associated, and explains the limited internal rotation.

The diagnosis is not difficult with care in making the examination. When bilateral there is a widening of the trochanters, a peculiar waddling gait; adduction may be so marked that the extemities interfere. The trochanters are above a line drawn from the anterior superior spinous process to the tuberosity of the ischium (Nelaton's line), abduction and internal rotation entirely restricted or limited to a small range of motion, flexion is usually slightly limited, while external rotation and hyperextension are free. A skiagram should always be taken to confirm the diagnosis as well as for future reference. When unilateral there is in addition a painless limp of insidious onset, slight pain may at times be felt in the hip or knee. Actual shortening of an inch or more, and aparently shortening from adduction is frequently three or four inches. The entire extremity is atrophied, especially in the thigh.

The case in question was referred by Dr. W. W. Taylor, of Memphis, with the following history: Boy, age 15; weight, 189 pounds; height, 5 feet. Obesity a family characteristic. About December, 1909, his teacher observed inability of the boy to carry out the usual school gymnastic exercises, which was thought a subterfuge of laziness. In several months limping was barely perceptible, but it was not until the latter part of August that his lameness was seriously considered. He was first seen by me October 3, 1910. Examination revealed a very fat boy with a painless left-sided limp of shortening. He complained of an occasional slight pain, referred to the inner aspect of the knee; otherwise, there was no further inconvenience. Measurements show one inch actual shortening, no apparent shortening as adduction was not marked, 2½-inch atrophy in thigh, which would be severe in a boy of average size. Abduction and internal rotation limited as was flexion to a slight degree. External rotation and hyperextension free. The relation of the trochanter to Nelaton's line could not be definitely made out on account of the excessive fat. Diagnosis: Coxa Vara of left side, which was confirmed by the accompanying skiagram (by Dr. W. S. Lawrence). Contrast the normal angle, A B C of the right side with A B C of the left side. Also notice that there is no evidence of bone destruction, and from the degree of depression of the neck the condition is either mild or in an early stage.

I saw a similar case in a fat boy of 14 during my service in the clinic of Dr. Adolph Lorenz, of Vienna, who evidently had underthyroid activity. From the obesity and general appearance conditions are possibly similar in my case, which may have caused a loss of fat balance with fatty infiltration of bone tissue, and yielding at the point of greatest strain.

Treatment: As a rule, no medicinal measures are indicated, but in this case I believe that thyroid extract deserves a trial. In patients of moderate size a simple stilting abduction brace should be used until the bone is firm, when an osteotomy can be done below the lesser trochanter by any of the various methods, and the extremity held in abduction and internal rotation by a plaster spica, including the foot below, and extending to the nipple, or axilla, above. I do not believe that a brace would be satisfactory in a subject with so much adipose, but when further reduced we may be able to use any desirable method. At present he is in a plaster spica extending to the nipple line, and the extremity held in as much abduction as possible. The condition has probably been present for one year, and at the expiration of two more years a corrective osteotomy can be done with excellent functional result if there is no further change visible by the X-ray, otherwise we must wait un-

til the process is stationary. In the meantime I shall apply successive plaster spicas with forcible abduction and internal rotation, which may restore the angle sufficiently to give perfect function.

It is essential that a correct diagnosis should be made, for the treatment and prognosis is so widely different in chronic affections of the hip. In Coxa Vara a perfect functional joint can usually be promised, while in tubercular and other affections the prognosis is often poor, both as to life and functional result.

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THE WORLD-VIEW OF THE EVOLUTIONIST

(The Journal presents in this issue the first of a series of chapters which will portray to our readers "The World-View of the Evolutionist," for the series will be so entiled. The first chapter sets forth the main features of the universe as a process of evolution under the caption, "The World as it Is, Its Evolution and Its Dissolution." The second chapter will set forth "The Fact and the Factors of Evolution," and so the series will proceed till the whole view point and philosophy of the evolutionist are clearly seen.

We believe that physicians will find the series interesting and, it is hoped, valuable to them.

We invite criticism of this series of articles. Address Evolution, Southern Medical Journal, Suite 905. Van Antwerp Building, Mobile, Ala.)

CHAPTER I.

THE WORLD AS IT IS, ITS EVOLUTION AND ITS DISSOLUTION.

Every reasoning man desires the answer to this question: What is the real constitution of the matter which we see as rocks, trees, animals, earth, stars—indeed, everything? We observe that this matter is ever changing form. Now it builds a rock which, disintegrating, becomes soil; this in turn becomes the matter in the grass which, on being consumed by an ox, becomes the flesh or the nerve whose force feels a blow and pulls the load. The question is: What are the real units of this protean stuff out of which everything in the universe knowable to us has been built? How did they become earth and plants and solar systems? What will ultimately become of all these forms so built?

These are questions which physics, chemistry, biology and astronomy try to answer. He who seeks to see the world as it is will try to find what the scientists in these great fields believe to be the truth; for their opinion is based on the largest opportunity and ability to find and interpret the facts, and their only motive is to tell the truth.

An attentive student of the truths they proclaim will find a view of the infinitely small and the infinitely large, and a world far more wonderful and soul-stirring than man could imagine. The microscope, the telescope, and the laboratory are instruments of precision that multiply many thousandfold the power of the eye of man, revealing to him the ceaseless dance of atoms and the vibration of a universal ether; the intricate mechanism and play of forces in the cell which forms every part of tree, fish, fowl, beast or man; millions of the stars that move and sparkle in illimitable space—revelations based on the evidence of senses common to all men, plain to those who will but come and see, and giving to the mind the real things of the world instead of the seeming things of the naked unaided eye. These veritable facts are more important far than the fancy of men, more sublime and beautiful than his imaginings.

The facts show that all forms of matter, all individual things, are transient. Nothing stands permanently, nothing endures forever;

but all forms that come into being cease to be, all are but temporary groupings of atoms—of oxygen, gold, iron, and the other elements—groupings which inevitably cease to be when the atoms composing them go from them to make other forms. Thus the cloud ceases to be when the atoms that composed it have gone to the making of raindrops. The atoms themselves are but temporary groupings of electrons, each the unit of mass and energy, each being a fixed quantity of electric force that occupies a fixed quantity of space. We do not know the origin of the electron and only partly its qualities, but we do know that these electrons make up the form of every kind of atom and that atoms make up the forms of all individual things in the heavens or on the earth.

THE EVOLUTION OF FORMS.

There are now visible in the heavens no less than 11,000 nebulae, cloudlike masses of glowing matter, charted and described by astronomers who think that the spiral motion of this mass of atoms will inevitably lead to the formation of a central large mass that will be the sun, and to smaller masses that will be the planets, of a solar system with orbits and a history like our own. No matter how distant from us this nebula or the stars, their light broken on the spectroscope proves that its matter is the same as that on our earth—oxygen, hydrogen, iron, etc. Thus we see electrons form into atoms in every part of space; thus the atoms gravitate in the ether to a common center and form a spiral nebula, and thus, no doubt, suns and planets, our sun and our earth, were formed from atoms once scattered through immense space.

The theory that the dispersed matter in space forms the spiral nebulae and that these in turn become stars and solar systems seems now to be clearly established by an immense array of facts. For instance, the famous white nebula in the constellation Andromeda is in process of condensation into stars, indeed, has already partially condensed into stars. The astronomers have reported that this nebula gives spectra of the solar type and that they "find evidence of progressive change in the spectra of nebula with change of form and that this progression indicates star clusters as the final product."

In this way, hundreds of millions of years ago, our earth had come into being; its oceans and its atmosphere formed of the oxygen and the hydrogen and the nitrogen atoms; its crust cooled and hardened and vast continents of lifeless rocks lay between the oceans and under the wear of the wave and wind and sun. Atoms on this earth were forever then, as now, changing from one compound to form another, just as water had been formed from hydrogen and oxygen gases. Higher compounds formed in the water and with each new form new qualities and new powers appeared as the result of new combinations of the sensitive energy in the matter organized in the individual form. Chemical unions ever more and more complex gradually formed, and in the course of time carbon, hydrogen, oxygen, nitrogen, and sulphur united with each other, according to their affinities, and formed proteins, starches and oils. In the ocean, out of the proteins, starches and oils, already formed, the affinities of their atoms made a still more intricate chemical union and formed the most complex in nature, a protoplasmic mass whose molecules form a cell, the properties of which we call life. These new properties were sensation and self-movement. This new compound reproduced itself by dividing one cell into two, and it could absorb nutrition for movement and growth from nutrient particles in the water in which it lived. When bits of protoplasm formed into a cell with its nucleus containing a mechanism that endowed every daughter cell with the powers and tendencies of its ancestry, there was born on the earth the unit that in time evolved all the million forms of life in the plant and animal world. The earliest cell formation occurred probably a hundred million years ago. From the minute protozoa which then formed in and spread through the ocean up to man was a

long, long way; but the life of man is without doubt a continuation of their lives, the last of the innumerable series evolved from them, just as the lives of these protozoa were but a continuation of the sensitive energies put by chemical union in the protoplasm. "The inorganic is already endowed with chemical and molecular life. The whole universe is alive and vibrates with impulses too fine for our dull senses; but in chemical affinity, in crystallization, in persistence of force, in electricity, we find a kind of vitality that is made into life. I never see fire burn, or water flow, or frost marks on the window pane, that I am not reminded of something as mysterious as life. A universal creative energy pervades the world, animating the atoms and causing them to combine so as to produce the primordial protoplasm."

Thus the solar system of which our earth is a planet was evolved by the laws of motion (which are its very nature) from matter once dispersed over vast areas of interstellar space. By gravitation a great central mass formed and became the sun whose planets were originally relatively small masses forming at the same time at great distances from the central mass and increasing by gathering together meteorites, comets, cosmical dust, satellites, the lesser masses near enough to be tethered to them. The "star showers" of 1779, 1833, and 1866,were but a falling into our planet of millions of meteors under the pull of its gravitation. In the same way as the earth was formed the moon was formed, and there can now be no reasonable doubt that every one of the many million fixed stars has a system of planets of its own and that these in turn have moons and comets and meteors revolving about them. Nor can there be any reasonable doubt that living beings essentially similar to those here on earth exist wherever a star twinkles in the depths of space, for on its planets will surely be found air and water and warmth and all other conditions which have made life a natural phenomenon on the earth, conditions which must make life in whatever part of the universe they may occur. Life is as natural as light, a natural phenomenon whenever matter is organized in a certain way under certain conditions now unknown to man. The life force is a natural combination of powers inherent in every unit of force, in every atom of matter.

Though some men distinguished by their attainments in science still cling to the age long belief that life is not a product of the forces of nature, but a "vital force" miraculously made on the earth at a certain time in its history, most men of science are now convinced that "life" is due to the laws of matter, that the living cell is only a structure of forces that were inherent in the matter organized in it, and that it is a magazine of energy existent in the matter gathered for a time in a certain way that produces life. There is no life as something apart from a certain collocation of atoms; there is no difference, except in their interrelation and interplay, between the atoms of "dead" and "living" matter. The ancient view that life is a spirit, an entity in the animal but not in the rock, must now, it would seem, be consigned to the discarded beliefs of the past. This view has fallen before the masterful strokes of the army of chemists and biologists now at work in the laboratories. To corroborate this statement I quote from Prof. R. K. Duncan, a most prudent, careful chemist, who says (Harper's Magazine, May, 1909):

"The search has proved unavailing: instead of "living" and "lifeless' matter there has been found—just matter. We have sought for "Life" and we have found "Law." We have come to the conclusion that every bodily action takes place through the operation of, and in accordance with, natural laws. If by "life" is meant a transcendental entity that acts in the place of these laws, or transects them, there is no evidenc of its existence in living matter; the body is a mechanism through and through."

It may be safely said that many, perhaps most, men of science—chemists, physiologists,

biologists and psychologists—believe and teach that there is no 'life.' They believe and they teach that all our feelings, thinkings and willings, our very consciousness, are the products of the play of the physico-chemical processes of the brain.

The form and structure of living things are due solely to the interplay of physical and chemical forces, and they are in no fashion the expression of an inner life; even man, in form and action so divine, is, physically speaking, just as much so and no more than the veriest water worn rock of the ocean. All the related facts of contemporary science declare that there is no supernatural entity visible in the activities of living matter that the living being proceeds in substance, action, form and motion as much under the laws of chemistry as any piece of zinc in a test tube of sulphuric acid. . . . .

"The muscles move in response to a nerve, the retina responds to light, the sensitive plant to a touch, and so on. This power to respond, or irritability, was once thought to be a manifestation of 'life,' but it has been discovered that metals and other organic substances respond to a stimulus just as animals and plants do. Furthermore, just as animals and plants become fatigued, and refuse to respond under a stimulation that is continuous, so do metals. Living beings and metals are alike too, in their actions under stimulants,—substances that have the faculty of exalting this power of response; they are alike in temporarily losing this power under the action of anaesthetics; they are alike in losing it permanently under the action of poisons; and, in a multitude of other similitudes, it has been shown that this whole business of the power of an animal or plant to respond to stimuli is a function, not of 'life' but of matter, and with the out and out proof of this has passed away the necessity of postulating for it any unknowable and arbitrary 'vital' force."

The cell is the unit of life and is usually so small that it requires a microscope to see it. Every tissue of every plant and animal is formed of cells which are but structures made by nature to collect and discharge the energy in the protoplasm which composes it. The cell is really an electric battery which generates a current by the nutritive changes taking place within it, and it is electro-magnetic energy that causes all the muscular contractions which move the body and all the brain actions which function the thoughts. The work of the cells is to take in atoms of carbon, hydrogen, etc., in a way to form protoplasm and to set free the electric energy contained in the molecules of the protoplasm. Hence it must be that the life-force is a form of electricity generated by the cell and must cease to exist when the cell ceases to take in its nutrition.

Some of the cells thus formed grouped into colonies and formed plants, and plants evolved into even higher forms; certain other cells that could not make their own protoplasm, but absorbed that already made by plants, became what we call animal cells, and these, too, learned to live in colonies, and so evolved from such lowly forms as the amoeba, the multi-cellular animal that evolved into ever more complex and better adapted forms, till the form of man was reached, the climax of evolution. This evolution of matter in living form has been in progress a hundred million years, for we find fossils of the simple forms of life in strata of rock made as long ago as that. Bones of lemurs, the lowest form of monkey, are found in Eocene strata computed to have been formed three millions of years ago; bones of manlike-apes, baboons, gibbons, etc., appear in Miocene strata made 850,000 years ago; and geologists and anthropologists estimate that man has probably been on earth 300,000 years

All this evolution of forms of life from the simple cell of a hundred million years ago into the fish and the higher forms since, some becoming extinct, others persisting till the present age, when we catalogue six hundred thousand living species of animals and five hundred thousand living species of plants—all this evolution of forms of life has been

the work of the laws of nature which achieve every phase of this ever changing universe. The new forms have come into being sometimes by sudden leaps, sometimes by gradual changes, but always and everywhere as the result of natural process, of the forces of heredity and environment.

Use and disuse and the environment affect the growth of parts of an individual, and those variations of his form that are inherited and advantageous will make his line persist while those not so will make his line become extinct. The forces of heredity are organized in the egg or seed which must grow into the size, shape, parts, color, and the mental traits of its own ancestry, and in going from the egg to the adult stage it must grow in every form in the line of development through which its own ancestry passed. Man, for instance, begins his individual life as a cell, an egg, and passes into forms of fish, amphibian, and lower mammals in his mother's womb before he becomes the form of man which he is at birth. Changes in the environments of an individual may produce changes in the egg which will make variations of form, and if the new forms are fitted to live in the environment they become permanent varieties in the plant or animal world. Thus the form of every animal and plant is a growth from forces in the egg or seed and is an adjustment to its methods of living—the food getting activities, the quality and quantity of food, the air, the soil, the water, the heat, of its environment. Thus heredity and environment are the twin creators of all forms of living things upon the earth; thus the natural laws which moulded the earth into a sphere have shaped the form and made the qualities of every living thing upon its surface.

"THE WRECK OF MATTER AND THE CRUSH OF WORLDS.

The preceding pages summarize what the scientists believe to be the history of the creation of the stars and the sun and the earth and its inhabitants. Their forecast of the future of our solar system is as follows:

The blue white stars are suns in the prime of life, just formed from nebulae; the red ones are suns slowly dying. Our own sun is a red star. Like all the rest it produces light and heat by shrinking perhaps a few feet each century till the natural limit of shrinkage is reached, when it will of necessity grow dark and cold. Under the laws of gravity our moon will in course of time begin to draw nearer to the earth and will finally fall into and become a part of it. The earth and all the other planets, lifeless and heatless as our moon already is, will fall into the shrinking and cooling surface of the sun. At last the sun, dark, cold, silent and solid, will continue to speed through space forever unless collision with some other celestial body convert the two into nebula, into a formless mass of atoms and electrons dispersed widely through space, which the loom of time will weave again into sun and planets.

We know there are such dark and solid bodies, extinct suns now poised and moving in the ether of space. The beautiful star Algol is periodically eclipsed by a dark body, larger than our sun, coming between us and it. Quite a number of times within our historic period a new star has suddenly come into view in the heavens and rapidly reached a condition of great brilliancy; then in a few weeks its brilliancy faded and the star finally disappeared. Such a star came and went in 1902. In 1572 a new star suddenly appeared in the constellation Cassiopeia and quickly became the brightest one in the heavens. These are now explained as due to the collision of two celestial bodies, probably extinct suns, at immense distances from us. The heat and light that suddenly appeared were due to the liberation of the intra-atomic ether energy caused by the shock of the collision, which converted the two solid globes into a nebulous mass that soon scattered itself through billions of miles of space.

Scattered fragments of matter become cold and dark, but, always being pulled by gravitation, they must gradually approach each other

and the motion of this approach inevitably forms a spiral nebula which is eventually resolved into a central sun and planets, all revolving on their axes and around a common center of gravity. The mass of matter in the sun and planet by contraction produces heat and light waves in the ether, and the oxygen and hydrogen on these globes unite to form water; thus making a condition whereby life may again be generated.

This is the eternal drama of nature. Careful and eminent scientists estimate that our sun and earth are more than a hundred million and less than a thousand million years old—that is, from its birth out of nebula to its present state; that the career of the sun as a light and heat giving body is much more than half spent, and that in time its gaseous substance will change first to liquid, then into solid matter; that its surface must henceforth cool rapidly by the radiation of heat, and a crust be formed that will cut off light from its central portion and make it a dark body. They estimate that the future during which the sun will continue to give light anad heat is more than twenty millions and less than a hundred million years old.

This view of a universe mechanized by natural law does not, as LaPlace told Napoleon his Nebular Hypothesis did, "leave God out." The logical necessity for a Creative Force, God, the inscrutable Cause of the one original element and its qualities from which all things knowable to us are made, still remains. This necessity will never budge, however the crude notions of man may vary from a gross superstition that pictures God as in man's likeness, as having ways and thoughts like man's ways and thoughts, to a crass materialism that denies His very existence. There must be, though beyond our ken, a Creative Force cradled in the nature of the atoms that make the sun, stars, earth, and the brain of man, and that dwells at every point in them. This Creator is not matter, nor is it human thoughts, but the Universal Being whose nature is but dimly discerned by us in the unchangeable laws resident in all forms of matter and mind. The Eternal Changeless Cause is resident in all things and is the Creator; the transient forms of matter and mind are the creatures. These come and go; God lives forever, "closer to us than breathing, closer than hands and feet," and deeper and farther than the search of man can go. His will is worked by the immutable laws of nature.

A PRACTICAL DICTIONARY.

By Thomas Lathrop Stedman, A.M., M.D., Editor of "Twentieth Century Practice of Medicine;" Editor of the "Medical Record." Octavo of 1,000 pages, fully illustrated, indexed. William Wood & Company, Publishers, New York. 1911. Price, thumb-indexed, $5.00; plain, $4.50.

Stedman's Dictionary includes the following features, some of them entirely novel: It gives the derivation of all words (when known) from the Anglo-Saxon as well as Latin and Greek. Pronunciation is indicated whenever it is not self-evident, and the accent marked in all the main titles and in most of the sub-titles. Tables of all the large (i. e., numerous) anatomical structures, such as arteries, muscles, nerves, sulci, convolutions, foramina, fossae, and pharmaceutical preparations, such as acids, tinctures etc. These are not given in tabular form across the page so as to confuse one in searching for words, but are run along in columns in alphabetical order, distinguished by different type. Other tables, such as of the elements with their symbols and atomic weights, thermometer scales, weights and measures, etc., are placed in the appendix (with reference thereto under the catchword in the body of the dictionary), thus not interfering with one's convenience in looking for words.

Especial attention has been paid to synonyms, and all the more common ones are noted along with each word defined.

Not only is this work complete on medical terms, but also on the allied professions and sciences, such as veterinary, dental, chemical, botanical, etc. In the anatomical reference the B. N. A. terms are given preference.

It is a very complete work, and embodies all the points of superiority which are claimed by authors of other medical dictionaries.

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Next Meeting Hattiesburg, Miss., November 11-13, 1911.

Medical Knowledge for the People

At the Los Angeles meeting of the American Medical Association the plan of publishing a monthly magazine devoted to sanitation, hygiene and simple medication, couched in language that the average private citizen could understand, and supplied at a price that would appeal to the non-professional reader, was suggested and received considerable attention.

The whole matter was referred to a committee for further consideration.

Meanwhile it is worth the while of the profession at large to also take the matter into consideration, for, though it is altruistically concerned in protecting the public aganst imposition and injury, yet, in a matter like this, it should look to its own interests also, and be sure that in helping others it does not unnecessarily inflict injury upon itself. Looking at the problem rationally, it might be presented something like this.

1. What are some of the reasons why such an effort to educate the public on certain things medical should be undertaken?

2. Why should it be assumed by the American Medical Association?

3. Are there any reasons opposed to the undertaking, and, if so, what are some of them?

Replying to the first question, many reasons may be cited why the public should be better informed on certain subjects considered as the province of medicine. The outrageous claims of the patent and near-patent medicine industries are accepted as true by the vast majority. And why not? What voice of protest or enlightenment ever reaches them? True, those fictitious claims are analyzed and exposed and their ridiculous character fully revealed, but these demonstrations appear principally, if not altogether, in medical journals, all but unintelligible to the public, or in quasi-scientific periodicals of an

expensive character, and wherein these issues are of secondary interest.

Meanwhile the sensational journals stuff the dear people with marvelous tales of starving nearly to death for the sake of health; eating uncooked food, with all its rank infections undestroyed; their advertising pages teem with fakes; and the great religious journals, that should sustain only the upright and honest enterprises, display the pretensions of the most blatant quacks, if not worse. People are robbed everywhere by conscienceless men who wring large sums from hard-working people on the pretense of curing incurable diseases, such as cancer, epilepsy or tuberculosis. And nowhere is there any organized protest against all this saturnalia of scoundrels that can reach and retain public attention. What good does it do to refute these things in medical journals? Doctors need no such information.

Another point upon which the public needs education is the value of vaccination against variola and typhoid. Fanatical outcries against these have been published again and again in newspapers and periodicals, but the unanswerable arguments against their falsehoods are found only in medical literature, where the people never see them.

Then there are the truths and fallacies of asepsis and antisepsis, the follies of fancied disinfections and the simple knowledge of domestic sanitation. All these should and may be taught the public, to say nothing of the many household measures that all should know. These are but a few sample reasons in reply to question No. 1.

Question No. 2—why the A. M. A. should undertake the work—is easy to answer. First, they have the plant and the money, and though a corps of writers of peculiar ability, writers who can express or illustrate scientific truth in simple language that the laity can understand and will like to read, will be a *sine qua non*, yet the wide acquaintance of its editorial staff will enable it to overcome that difficulty.

The capital that will necessarily be sunk in starting will, if the enterprise proves popular, soon be returned manyfold, and every member of the association can act as an agent to secure subscribers.

3. As to the reasons opposed to the measure, they are chiefly imaginary. Some doctors have an idea that if there were no patent medicines people would call for a prescription every time their bowels failed to move in the morning, or whenever their digestions were overloaded, but they are mistaken. Patent medicines are the doctor's best friends. They accustom people to depend upon drugs which derange metabolism generally, and when their favorite remedies fail they conclude the case is desperate and send for the doctor; but they are not, as a rule, going to do this until they have exhausted their own supposed knowledge of medicine. Only repeated, constant exposures of the humbugs *where the people will read them* will ultimately weed out the patents. Then they will turn to new ones that will constantly arise, unless there exists some ample system of domestic medicine for the every-day derangements incident to modern life, but not sufficiently serious to warrant "sending for the doctor." But these simple, practical measures must be such as are approved by the doctor and recommended by him, and, indeed, are preparatory for his services should the trouble prove obstinate. Founded on this principle, a scheme of legitimate medicines could be thus established and taught in the proposed journal, as an advanced guard for regular medicine, a *materia medica domestica* that would gradually run out the murderous, piratical patents. Then, when domestic medicine failed, the doctor would take up the case from a sensible and intelligible standpoint.

Another objection is doubt of such a maga-

zine being a paying investment. Even from a money standpoint, it should pay soon, and pay well, under the wise and experienced management it would have; but for payment in the largest way it would serve as a long-needed defender of the doctor before the bar of public opinion. Up to this time no such defender exists, and the public accepts our silence as proof of stupidity, insolence or guilt. Who so able, from every point of view, to establish our defense as the great American Medical Association?

Our Sincere Thanks

And hearty acknowledgments are hereby tendered to the *Texas State Journal of Medicine* for the handsome manner in which it refers to the SOUTHERN MEDICAL JOURNAL regarding its stand on ethical advertising. Such words from fellow-editors are as rare as they are refreshing. When a man makes a great sacrifice for the right, he is rewarded by his own consciousness of rectitude, but it does him good to be told by others that they appreciate his work, especially if those who applaud are likewise innocent of the sin of Esau and have refused to sell their birthright for a mess of patent medicine pottage.

Thanks, Texas Brother. We are proud to haul on the same rope with you.

A Boomerang

Many of us have wondered what was the source and support of the recent onslaught on that "noblest Roman of them all," Pure Food Wiley. The orificial ligature is now loosened from the bag and the concealed feline escapes to public view. The *fons et origo* is, it appears, the A. P. A., which, being interpreted, spells Advertisers' Protective Association, with headquarters in lock box No. 2124, New York City, Frederick W. Cooper, Secretary.

This gentleman has been sending out letters to editors of influential papers and hinting that $100,000,000 a year would be spent by the A. P. A. in advertising, and, if they wanted a slice thereof, it behooved them to govern themselves accordingly. Several of the editors thus addressed have resented the insinuation that they were for sale, and expressed themselves in no uncertain terms. Among these, the *Daily News*, of Portland, Oregon, is so rich, rare and racy that we reproduce it for the delectation of those of our readers who have not read it, as it was reprinted in the *A. M. A. Journal* of July 15. Surely there must be some stimulating quality to the air of the far Northwest that energizes the word center in the proper region of the cortex and makes it fairly boil over with exuberant language.

Listen to the *News:*

What, ho, fellow-citizens!

Ever hear of benzoate of soda and Dr. Harvey W. Wiley?

Well, lest you have forgotten, in the mad rush to earn your daily bread, the recent exposures of the former by the latter, glance at this and then read about the Advertisers' Protective Association.

"Benzoate of soda" is a chemical combination so powerful that it completely arrests for a long time all natural decomposition in vegetable and animal tissue. It was hailed as a life-saver and a blessing in disguise by the food trust, for it was a cheap and inexpensive preservative, and by mixing it in everything from catsup and canned beans to pigs' feet and dill pickles, said food trust waxed fat.

What cared the trust if the same benzoate of soda that preserved the food tended to preserve the stomachs of the "ultimate consumer"?

Not one whit.

But Dr. Wiley did.

This friend of "us folks," who presides over the Bureau of Chemistry of the Department of Agriculture, has been messing around a lot with things we eat, and, as a result, there are pure food laws. Incidentally, it has been hard sledding for the food trust these past years.

In passing, the good doctor took a few jabs at "patent medicines," makers of bad whiskey and other health-menacing concoctions.

Of course, all of this "had a very depressing effect on trade"—that is, most of us shied at having our stomachs preserved.

Enter the Advertisers' Protective Association, "composed of manufacturers of food, beverages and drugs, representing an investment of $400,000,000, whose advertising expenses are annually $100,000,000."

Recognize 'em? Why, of course. Merely the food trust all fussed up in new clothes, with a new name.

Now, this A. P. A. affair proceeds to don further disguise. It rents Lock Box 2124 in New York City, hires one Frederick W. Cooper as Secretary and gets into action.

Frederick W. gets right down to business and has a circular letter printed telling what an undesirable citizen is Dr. Wiley, and urging that he be roped, slaughtered and preserved—probably with benzoate of soda.

But right here Frederick W. Cooper made the mistake of his life, if he intended to work under cover, for he sent one of his circular letters to the editor of the *Daily News*.

"Dear, Mr. Editor," begins Frederick, and then he alludes to the "vicious and uncalled-for assaults on foods, beverages, etc.," meaning the unhealthy output of the food trust, and says that probably "many publications have felt the reduction in advertising patronage" as a result.

Right alongside of this is that statement of "advertising expenses are annually over $100,000,000."

Then he points out what an inefficient man is Dr. Wiley, and how the doctor has "squandered" millions of the public's money "circulating untruthful reports about benzoate of soda, whiskey and Coca Cola."

Frederick blames "Heinz's 57 Varieties" with leading the fight on poor old benzoate, says that "Caffeineless Coffee" helped wallop Coca Cola, that the American Medical Association hammered the "patent medicines," and that the Kentucky distillers mauled "whiskey." By innuendo, Frederick intimates that Dr. Wiley "benefited" by these attacks.

The letter continues with a plea that the editor write to his Senator and Congressman and take the matter up in the editorial columns and go for Dr. Wiley, closing with the assertion that "we are American citizens, not Russians, and that bureau-made law and one-man power are contrary to the spirit of our American citizenship."

Well, here is the editor's answer, Frederick:

The *News* does not want any of the A. P. A.'s $100,000,000 a year. More power to "Doc" Wiley. (Senator Bourne and Representative Lafferty, please note.) His is not a one-man regime, an autocratic bureaucracy.

There are 95,000,000 "ultimate consumers" behind the "Doc," Mr. Frederick W. Cooper, and we will back them against your $100,000,000 a year and the other boasted $400,000,000 thrown in. Your gang fed us embalmed beef and bum drugs and benzoated pickles for many a long year, and now we advise you to have a care lest some one of the long-suffering 95,000,000 lies in wait for you at Lock Box 2124, follows you to the lair of the A. P. A.'s and "tips the joint off to the police."

Believe us, Freddie, what has already happened is but a summer zephyr compared to what will happen if you are not careful how you spend that $100,000,000 a year.

The position of the *News* is correct.

The honorable, upright servant of the people, when once his worth is recognized, is sure to be sustained by them against unjust attack. The result of the recent effort of the A. P. A. to have Dr. Wiley dismissed on trumpery charges demonstrates that "you can't fool all of the people all of the time."

Suppose! Then What?

After reading the editorial in the A. M. A. Journal of July 22, entitled *"Getting" Dr. Wiley*, the writer relaxed from the throes of disgust caused by the recital of the despicable attempt of banded interests to destroy what few and feeble barriers the people have against being poisoned and plundered for profit, into a retrospective frame of mind, and after recalling graft after graft of which prominent people have been accused, he said to himself, "sez he," supposing all these things were true, what would they amount to, and which among them are the most pernicious? Reverting to the burst of indignation when a member of the Supreme Court of the United States, by reversing his opinion overnight, changed the possibilities of government revenues enormously and placed another ponderous stone on the fortress walls of privilege, and coming down from the contemplation of unholy millions down through the

illustrious list of banded robbers to the recent instance of Dr. Wiley robbing the government of nine dollars a day, without authority, as extra pay, disbursed to pay for services rendered to that government by a man "no kin" to Dr. Wiley (all of which Dr. Wiley didn't do); and seeing what a rumpus was made about this small matter, while the Guggenheims *et id omne genus* ladle millions of government property into their own kettles without serious opposition, or even with official connivance, the question rose: What if, after awhile, the great public becomes exasperated at this constant betrayal, and, in a blind rage, seeks relief and retribution? In no other country in the world are the "vested interests" so absolutely at the mercy of the citizenship. Not a barrier exists between present conditions and the confiscation of all public utilities to government possession that cannot be swept away by a popular wave of indignation controlling the actions of majorities in every state, so amending the Constitution as to demolish a Supreme Court which they believed was prostituted to power. And this tampering with the purity and safety of the food and drink upon which they and their children must grow and thrive, or dwindle and die, gets closer to the people's hearts and their springs of action than any other iniquitous graft. It was a surly growl that went up from all over the country when Wiley was threatened—a growl that President Taft recognized. People say that this country will never see a revolution. True enough, so far as the Marseillaise and the red flag frenzies are concerned. But, without bloodshed or riot, whenever the hour comes that convinces the people at large that their birthright has been bartered to capital for a consideration of political and financial support, in that hour will the foundations be broken up, and ballots now contemptuously bought will, in self-defense, be joined to those of rational purpose, and a revolution in our government will be inaugurated whose consequences will be equal to those of the great French affair. And just such men as Dr. Wiley and his helpers stand on the sentry line, the point of greatest danger, while traitors to country and humanity seek his destruction. Thank God the people are waking up and have given our recreant officials a few surprises that may moderate their noxious activity.

A Good Idea

The desirability in ocular work of being able to firmly fix the lens without wounding the capsule is a proposition above dispute. Its advantages are too evident to need specification.

Vard H. Hulen, A.M., M.D., of Houston, Tex., announced to the Section on Ophthalmology of the A. M. A., at Los Angeles, the invention of an instrument which is operated by a vacuum registered on the gauge as 20 to 25—not a very high degree.

After the usual local anesthesia is secured and the section made securing one-half the circumference of the limbus, and a fine silk suture introduced in a manner that controls the opening, iridectomy is done, the blood, if any, is washed out, and the cup of the "vacuum extractor" is introduced from the side and gently placed on the capsule over the center of the lens. When the cock at the gauge is turned, the vacuum cup will "grasp the cataract most rigidly."

The lens is then gently lifted, rotated on its antero-posterior axis to sever the suspensory ligament, "then slowly and gently lifted out through pupil and section." Thus is the removal of a cataract wonderfully simplified. The article, well illustrated, appears in the A. M. A. Journal of July 15, and is what Horace Greely would call "good reading."

The discussion was participated in by several of the most expert operators in America, and is printed on pages 213-215 of the same journal. Most of the speakers heartily and some enthusiastically approved the operation,

though some objections and several modifications were suggested. One said that a vacuum of 25 pounds might rupture the lens. Now, the writer is not sure of the correctness of his supposition, but he does not believe the 25 on the gauge can mean 25 pounds, for the simple reason that the entire exhaustion of the atmosphere at sea level results in only 15 pounds' pressure.

Possibly the figures on the gauge used by Dr. Hulen referred to subdivisions of a column of mercury whose height just balances the weight of the atmosphere about 30 inches. If inches were indicated, the pressure would be 15 pounds, divided by 25-30 to the square inch, or 5-6 of 15, or 12½ pounds. As the area of the suction surface would be probably about 1-6 of an inch, the vacuum pressure would be 1-6 of 12½ pounds, or 2 1-12 pounds—very different from 25 pounds, but enough, in all conscience. Another possibility is that the figures are for centimeters of mercury column, still farther reducing the pressure; all of which may be entirely wrong, but is worth investigating. The manufacturers of the gauge can quickly solve the riddle. The point would really seem to be of some practical importance.

Salvarsan Again

The *New York Medical Journal* of July '15 publishes "a warning" by W. C. Slusher, M.D., and "a criticism" by C. F. Marshall, M.D., F.R.C.S., both concerning the use of salvarsan.

The latter concludes from his reading and observation that "606" is no more prompt and certain in its remedial effects in syphilis than are mercury and iodide of potassium properly and boldly given; that it is fraught wth dangers unknown to those older remedies; that relapses after its apparent cures are more frequent and severe than after mercurial treatment, and that numerous deaths have resulted from its intravenous administration.

This is a severe arraignment, but the points are so well presented and sustained that they impress the reader with the wisdom of an attitude of waiting without bias for further demonstration. Dr. Slusher, on the other hand, suggests that the disastrous effects sometimes following injections of salvarsan are not due to the drug itself, but to its improper preparation, being so prepared that it carries with it whole colonies of staphylococci, and he believes that the reported cases of necrosis and infection come from this source. He states that physicians often prepare their solutions without regard to asepsis, thinking the drug itself to be a germicide, when the truth is that colonies of staphylococci, mixed with solutions of salvarsan and "slanted" on agar, grow luxuriantly. Evidently there is yet much to be learned about salvarsan.

My Kingdom For a Typewriter!

How true it is that "blessings brighten as they take their flight."

The exhaustion of an ink ribbon and the consequent return to pen and ink most forcibly impresses the writer with the value of the suspended convenience.

Again, the inky fingers cause invidious compliments from *mater familias.*

And the dip, scratch, dip of the pen is monotonous and slow.

A typewriter is so handy to have in the office or at home, especially in one of the modern, light, portable forms.

Twenty years ago who would have imagined a complete, high-grade, type-bar writing machine, with all the small and capital letters, all the Arabic numerals, punctuation marks and signs, with the symbols of pharmacy for prescription writing, with a ready change from black to red ink and back again by merely sliding a catch, and all this in a black leather case no larger than a kodak, and weighing just eight pounds! Yet there it sits, on my desk just now, though often carried home for night work, never having to be removed from the case. One just opens it

and goes to work, its neat, dainty appearance being especially pleasing to the ladies who use a machine. Doctors have often been ridiculed for their illegible chirography, but with such a machine at his elbow no physician need fail to make his wishes intelligible to either patient or pharmacist, the pharmaceutical symbols being especially distinct and clear. Moreover, a slip of copying paper inserted between two prescription blanks leaves an unimpeachable copy with the writer.

Composition on the keys soon becomes second nature, so that the scientific article need not be entrusted for copying to the tender mercies of uninstructed "typists" whose massacre of technicalities is often ludicrous. And one of these modern machines can be shut up in a trunk or valise, or carried in the hand like a case of instruments. Surely, the world "do move."

THERAPEUTICS.

Calomel.

No medical journal need apologize to its readers for frequent mention of this old, standard drug. It is one of those medicines which, like vaccination, has borne the brunt of fanatical ravings from all sorts of fads, isms and pathys, and has won out unscathed.

With many doctors of wide experience and observation it occupies a position that may be likened to a certain principle in old-fashioned whist, to-wit: 'when in doubt, play a trump," so that "in a case of doubtful diagnosis try a dose of calomel" might be the paraphrase. In spite of the demonstrations of numerous laboratories of pharmacology, whereby it is proven that calomel has no effect upon the secretion of bile, the clinical experience of generations of common-sense doctors proclaims, "I know better." So also will the personal experience of almost, if not quite, every one of those skeptics declare, if they will take into their "innards" a "broken dose" of calomel prescribed by a doctor who knows how to use the drug. But the effect of calomel, properly administered, in changing the pale, pasty stool of a malarial patient to a dark, glabrous, greenish brown, and the prompt euphoria that results, is only one of the many valuable properties of calomel, most of which are undreamed of in scientific pharmacology. Its powerful germicidal and insecticidal properties are brilliantly demonstrated by its prompt destruction of maggots in the neglected sores and wounds sometimes seen in indigent patients.

All the fussing with carbolic acid lotions, or the dangerous bichloride solutions are worse than useless. A little calomel sprinkled over the affected area will cleanse it of all extraneous life in an hour, without pain, odor or danger. Four or five grains is enough for any such place. If mixed with sixty grains of bismuth it can be more evenly distributed. But if what a "cowboy" once told the writer is true, distribution is not important. He asserted that when, in the cattle droves, the animals were wounded in passing through "a fly country," maggots often got into the wounds. Then by using calomel liberally in one wound the worms would soon be killed in all of them. Curious, if true.

The systemic influence of calomel was well known to the practitioners of preceding generations. So great was their faith in the drug that they carried its use to the point of abuse, led by enthusiasm consequent upon success following its rational administration. The mercurial salivations and necroses were caused by the same sort of impulse that has recently led to the gorging of weak digestions with quantities of milk and raw eggs that would sicken a cornfield negro. But how prompt and how

sure was the relief it secured for them in such visible inflammations as iritis!

Though it is pleasant and desirable to know, if possible, *how* a drug does its work, it is not so indispensable as to know *what* it does. So though we may not know all of the *modus operandi* of calomel, we have learned what to expect from it under many different circumstances. A glance at a few of the results of using calomel in various ways and conditions seems proper at this juncture.

First, locally. Its effect as a dusting powder for maggots has already been described. One part of calomel to twenty of talcum powder and five parts of subgallate of bismuth makes the most efficient dusting powder for weeping eczema the writer has ever used. A salve, of which twenty grains of calomel to the ounce of benzoated lard is the foundation, is very useful. Without any addition it has proven a useful ointment for eyelids whose edges are red and inflamed. In all probability its virtues in these forms of application depend upon its germicidal powers. Internally its uses, and the ways of using it, are legion. To begin with, let its laxative effect be considered. Five grains, divided into five one-grain doses, "one taken every two hours until the bowels move freely," will in almost every instance cause free, dark, bilious stools that give a sensation of scalding or burning to the anus during their passage. And right here is a very important feature of practice. In malarial fevers of any kind, it often seems as though quinine had no effect upon the disease, no matter how freely given. But when once the doctor secures a genuine calomel action from his patient, the quinine will immediately begin to have the proper effect. It is not the purgation that makes the difference.

Irregular practitioners generally begin work with that idea, but after successive failures with epsom saults, colocynth, podophylin and so on, they all have to resort to calomel, when they use it extravagantly.

Another way of giving calomel for its laxative and cholagougue effects is in quarter grain doses every thirty minutes until it acts. Podophyllin in quarter grain doses is often given with it, but this is a mistake, and causes unnecessary nausea and griping. Pedophyllin requires several hours for effect, and after swallowing several portions, each containing a quarter of a grain, the patient is in for an hour or two of useless suffering. If given on the thirty-minute schedule the doses of podophyllin should not exceed the twelfth of a grain each.

In urgent cases, such as malarial congestion, congestive fevers and haemoglobinuria, small doses of calomel are useless, while large ones are extremely beneficial. From five to ten grains, in powder, may be given every hour for four doses, without any deleterious results, and often recovery visibly begins with the first calomel stool. What is a genuine calomel action? Many doctors of considerable experience mistake a dark, greenish brown, fluid action, of the appearance of mock turtle soup, for genuine calomel actions, whereas they come from congesetd and poisoned tissues and will result fatally unless changed.

Very large doses are needed in such an emergency, and when there come dark, greenish brown, *mushy* stools, the battle is won, and not until then.

As for salivation, it is almost never seen nowadays, and then only in cases of idiosyncracy. But "that is another story."

ANTIPYRETICS (continued).

In the August number of this journal some space was devoted to a consideration of certain synthetic antipyretics in general use. From one point of view, however, they received no attention, namely, the indications that may either suggest or forbid their use.

Few points in the treatment of fevers are so lightly considered as this, the practice ranging all the way from declining to order any antipyretic measures except in extremely high temperatures, and prescribing "a tablet" for everything over 99 degrees. Moreover, theory varies as widely as practice. One says that

fever is nature's way of producing a degree of heat that will be unfavorable to the multiplication of the causative bacilli, or even fatal to them; therefore it should be allowed to run its course unhindered, unless excessive, when it should be reduced by cold applications or baths, that absorb the excess but do not stop its production. On the other hand, another will point to the destruction of tissue evident in the urine of every fever patient, and will consider it his duty to meet every rise of temperature above the normal with some antipyretic drug or measure.

To a conservative thinker it would seem that it is like the old controversy over the color of the chameleon. Both are right and both are wrong. Observation of many cases impresses one more and more that no two are exactly alike, each requiring its own special management. The difficult points are, first to decide whether or not an antipyretic is needed; second, if yes, what kind of an antipyretic; and third, how far it shall be employed. Just as an airtight stove produces heat by burning carbon-bearing substances, so does the body manufacture heat by burning (oxidizing) carbon-bearing substances. Contract the amount of oxygen available to stove or body, and the fire languishes, hence the necessity for exercise to maintain the circulation of oxygen. Nervous derangement, such as some toxins occasion, makes the heart beat faster, the respirations more frequent and the circulation more rapid, thus stimulating oxidization in the system, as a "blower" fans the fire. Acetanilid and its like quiet the nerve excitement that is acting as a blower, and the circulation slows down, oxidization diminishes and heat is more slowly generated. But this slowing of the heart sometimes goes too far and it stops beating. Again, if the stove is too hot it can be cooled by the application of cold water, which will evaporate and dissipate the heat in visible or invisible vapor. One effect of the coal tar antipyretics is to cause profuse perspiration, which, like the water to the stove, results in dissipation of heat by invisible evaporation. Finally, to carry the illustration to a finish, if there is a good fire burning in a stove, and a damper in the chimney stops the escape of smoke, and the ashes cover the grate, the imprisoned heat will for a short time try to escape through the iron, making it very hot. Then the fire will go out, the stove is "dead cold."

Such being the theory of body heat and antipyretics, the problem is, how can we know when to interfere? The thermometer alone is not a sufficient guide. It is believed by many that the solution of the puzzle consists of three elements, namely: the diagnosis, the physical condition, and the sensations of the patient.

A diagnosis of measles, or scarlet fever, or intermittent malarial fever, or articular rheumatism, for instance, would cause some doctors to feel justified in controlling the temperature with a coal tar remedy, when, if it were typhoid fever, diphtheria, or pneumonia, he would hesitate.

Even in the first series specified the second and third requisites for a decision would be duly considered, for if the patient's condition were anemic, debilitated, with weak heart and flabby muscles, the doctor would hesitate to prescibe acetanilid, acetphenetilin or antipyrine, unless the patient's sensations demanded such relief. For it often happens that the pain, restlessness or distress caused by even a moderate degree of fever in one of these weak, nervous cases is magically relieved by those drugs. In such cases the doctor prescribes under a load of anxiety, and endeavors to "hedge" against overeffect by combining with each dose a small amount of ammon. carb., caffeine cit., or strychnine sul. Undoubtedly, the sensations of the patient are too reliable and important to be disregarded, but are by no means an infallible guide. Recently, under the enthusiastic recommendation of such men as Abbott, Waugh, Shaller and others, aconitine amorphous (not the violent, crystallized form) has been used by many physicians scattered widely over the country, for the con-

trol of fevers, "no matter what the cause (except from sepsis)." One granule of Abbott's amorphous aconitine, containing 1-134 of a grain, is the average minimum dose for an adult. In active fever (except sepsis) one granule is given every thirty or every sixty minutes, always in solution. For children one granule for every year of age is dissolved in twenty-four teaspoonfuls of water, and then one additioal granule is dissolved theerin. Under one year the single granule in the twenty-four teaspoonfuls of water makes a safe dose for any age from four weeks up. In extreme cases give a teaspoonful every fifteen minutes. Generally every thirty minutes answers. When fever begins to yield, give every hour until the temperature is below 100 F.

Too many practical men of wide experience have written favorably of this measure for it to be without merit. A supremely important point is to be sure that it is the amorphous aconitine that is used. The crystalline form is a most violent poison.

The control of abnormally high temperature is a matter of such great importance to physicians and patients that the occupation of so much space in the JOURNAL for its discussion seems justifiable. The use of external cold will be considered in a future article.

GOLDEN RULES OF DIAGNOSIS AND TREATMENT OF DISEASES.

By Henry A. Cables, B. S., M.D., Professor of Medicine and Clinical Medicine of the College of Physicians and Surgeons, St. Louis, Mo. C. V. Mosby Company, Publishers, St. Louis, Mo.

The foregoing title introduces to the general practitioner a handy little reference volume of 278 pages full of practical information. It is intended as "a book of ready reference of diagnosis, treatment and remedial procedure," and that is all; but that is much. Many a physician would be glad occasionally to turn to such a work for a bit of new or forgotten information to enlighten him in some unexpected moment of uncertainty. The author lays more stress upon clinical than upon laboratory diagnosis, yet he calls upon laboratory measures for information or confirmation quite as often as the busy practicing physician has time to use it. Dr. Cables is not a therapeutic nihilist. On the contrary, he recommends various drugs and medicines, but insists that their use should be directed by a knowledge of the actual therapeutic properties thereof. Consequently he condemns the physician who "administers to the patient the first cardiac stimulant that occurs to him," regardless of its other qualities and properties. For purposes of convenient consideration he arranges diseases regionally, as "Diseases of the Stomach; Diseases of the Intestines; Diseases of the Liver; Diseases of the Gall-Bladder;" and so on, treating last the "Constitutional Diseases," under which heading he describes only three, namely, Arthritis Deformans, Gout, and Diabetes Mellitus.

On the whole, however, the work seems to the reviewer too limited in scope and too sketchy in construction to be generally useful. It might be considered about the thing for the doctor's wife to take along with the children into the country for a summer vacation and rest. If one of them became ill it might help her to decide whether the sufferer had a case of coryza or measles, and so whether or not to send for the doctor.

THE MEDICAL EPITOME SERIES—DISEASES OF THE SKIN. A Manual for Students and Practitioners. By Alfred Schalek, M.D., Professor of Dermatology, University of Nebraska. Second Edition, Thoroughly Revised, with 47 Engravings. Lea and Febiger, Philadelphia and New York.

This is a small book of only 255 pages, including the index. The first twenty pages are devoted to the anatomy of the skin and its appendages. Then fourteen pages treat of general symptomatology, two or three of the following pages deal with general diagnosis, and then come considerations of General Internal Therapeutics, General External Therapeutics, and General Rules in Dermatology.

After this comes a clasification of Diseases of the Skin which promises to afford a working basis, but at this point the author drops all effort at rational sequence and takes up the study of Diseases of the Skin in alphabetical order regardless of relationships, beginning with Aene; Ainlunur; Albinismus, etc., and ending with Xanthoma. The description of each disease includes "Synonyms, Definition, Varieties, Symptoms, Etiology, Treatment, and Prognosis.

The subject of treatment is very thoroughly considered in most instances, and is illustrated with a liberal number of prescriptions.

At the end of each subject appears a list of questions, pertinenttly framed. The opinion formed by the reviewer is that no human being can learn much about dermatology from this book, but if one has once known the subject fairly well, this little epitome will serve as a useful reminder in the hour of emergency or haste.

BOOK REVIEWS

HUMAN ANATOMY.

Including Structure and Development and Practical Consideration. Edited by George A. Pierson, M.D., Professor of Anatomy in the University of Pennsylvania. Octavo of 2,088 pages; 1,734 illustrations, of which 1,522 are original. J. B. Lippincott Company, Philadelphia.

The purpose and plan of this mammoth work on human anatomy is set forth by the author: 1. The presentation of the essential facts of human anatomy, regarded in its broadest sense, by a descriptive text, which while concise, should be sufficiently comprehensive to include all that is necessary for a thorough understanding not only of the gross appearances, and relations of the various parts of the human body, but also of their structure and development. 2. Adequate emphasis and explanation of the many and varied relations of anatomical details to the conditions claiming the attention of the physician and surgeon. 3. The elucidation of such text by illustrations that should portray actual dissections and preparations with fidelity and realism.

The question of embryology is reaching such magnitude in importance, that the surgeon, besides learning thoroughly his anatomy, must likewise know how much and from what embryonic layer each tissue develops. To this end there is given a most excellent description of the development of the body.

As set forth in the outline and plan of the work, the absolutely accurate descriptions of the human body in all its intricacy, has been accomplished by the cooperation of several professors of anatomy, such as Professors Dwight, Hamann, McMurich, Piersol, White, Heisler. These descriptions, for the most part, are based on the actual studies of the original dissections of these various anatomists.

One of the special features of unusual utility, is the "Practical Considerations" under each subject. This gives the student an insight into the subject of principles of surgery and operative surgery, and in this way lends an interest-awakening feature, thus making the study of antomy something real, enabling the student to associate and correlate the facts of anatomy with the practice of medicine and surgery. The practical considerations include all the abnormalities of parts and organs, and in many cases, the means of correction, giving in special cases the complete operation.

The regional anatomy, descriptions of the viscera and special organs, are all of unusual completeness and accuracy, so that a student cannot fail to form the proper conception of these anatomical facts.

Since this is a completely American text, possessing superiority in so many respects, we take great pleasure in recommending it to every student beginning the study of medicine, and as for that matter, to every physician or surgeon who desires an accurate and complete description of the human body.

DISEASES OF THE ANUS, RECTUM AND SIGMOID.

For the Use of Students and General Practitioners. By Samuel T. Earle, M.D., Professor Emeritus of Diseases of the Rectum in the Baltimore Medical College, etc. With 152 illustrations in the text. J. B. Lippincott Company. Philadelphia and London.

Once in a while there is published a medical book that is not only excellent in matter, style and workmanship, but also positively *new* in substance and illustrations. This is such a book. There is no other like it. It contains few quotations from other works on a similar subject. The literary style is concise, clear and scholarly. There is no pretence at profound erudition, neither is there any assumed air of simplicity or popularity in phrase or manner. The author never seems to remember his own existence. All his energies are concentrated on telling a plain truth in each paragraph, in such a way that it can mean only one thing. The first chapter is devoted to the "Anatomy and Physiology" of the parts, the second gives most minute instructions in the art of "examination" of the structures in question, and the third deals with constipation. This third chapter alone renders the book indispensable to every general practitioner. The disorders and diseases of the lower part of the large intestine, rectum and anus receive far too little attention in most of our standard medical colleges. A few perfunctory lectures introductory to some form of surgical operation; or a hurried consideration of constipation in connection with digestive disorders, and perhaps some discussion of laxatives and purgatives by the profesor of therapeutics, is about all that most students are told in regard to the diagnosis and treatment of some of the diseases most common and most depressing to humanity.

Few schools of medicine recognize proctology as sufficiently important to be mentioned in their catalogues.

Such a book as the one under review goes far to remedy this state of affairs by lifting the dense cloud of ignorance that now so blinds the general practitioner that his patients go to advertising sharks for the relief he himself should be readily able to give them.

It is a pleasure to read, review and recommend such a book as this.

The operations described are illustrated by photographs taken of each successive step from beginning to end. They are artistic in their arrangemnt and execution. Some of the pictures of frozen sections add a new chapter to anatomical knowledge. Though the author believes in drugs and knows how to use them it is easily seen that he prefers non-medical treatment, such as diet, massage, hydrotherapy, exercise, and suggestion when they can be successfully used; and he gives minute instructions for the proper use or application of each.

To illustrate his genius for conciseness one needs only to read his description of Gant's operation for excision of the coccyx, giving every step, from the first grasp of the skin with thumb and finger, to the completion of the post-operative dressing. Although all is made so clear that it seems as though "anybody could do it," yet the whole description occupies only sixteen lines.

MISCELLANEOUS

The A. M. A. Trip of the Louisiana Health Exhibit Car

June 18, 1911, without any "fireworks" to speak of, the most unique and effective advertisement a state ever had was pulled out of the Union Station in New Orleans.

It was Louisiana's "Gospel of Health on Wheels."

Two cars, bearing on the outside of one in black and white and on the other in gold letters the legend, "Louisiana State Board of Health Exhibit," made up the novel poster.

On the 7,000-mile transcontinental trip hundreds and hundreds at stations and along the road read those words, stared and wondered. Where the train train stopped and they saw the

inside the message was understood, but the thoughts of those who for a flitting moment saw only the outside are not recorded in the log-book of the train.

One of these cars contained the health exhibit, of course, but, in addition, Louisiana was there—her public institutions, oil and gas wells, sulphur and salt mines; her skyscrapers, romantic spots and public men, in prints, adorned the walls. The pelican and the whole family of ducks, oyster shells a foot long, Grunewald Hotel wrapped "French" bread, models of new "plants" and many other things characteristic were there. But, most important of all, interesting pamphlets set forth the climatic excellence of the state, the low death rate and the genius of her people. These were to give to the misinformed.

In the second coach the "living specimens" were housed comfortably, that they might "talk" successfully and interestingly *health* and *Louisiana*. Dr. Oscar Dowling, President of the State Board, in charge of the train, intelligent and forceful, equal to every occasion, from taking a picture of the shabby little boy who "didn't remember when he had had a bath" to making an address in church or a brilliant after-dinner speech at a banquet; Dr. Beverly W. Smith, Vice President of the Board, scholarly and elegant, an ideal representative of Southern culture, and Dr. Sidney D. Porter, genial and happy, even when hookworm was tabooed, were the notables of the force.

In Texas, at Houston, San Antonio and El Paso, the three places where the train was parked, Louisianians greeted the exhibits and expressed their pride and satisfaction in the progressive spirit of the Board of Health and the business enterprise of the state as evidenced by this new venture.

In Los Angeles the train was parked in the Arcade Station Park, a beautiful spot, and had for near neighbors the California health coach and the Red Cross car. Thousands of the physicians and citizens took in the Louisiana "show," and universally they endorsed the idea. The pathologic specimens, prepared by Dr. Edmond Souchon, of New Orleans, attracted the attention of all.

Members of the force were invited to give lectures on Sunday evening in the churches, and on other days in different halls, and to audiences of various types. One of the talks made by Dr. Dowling was to the men engaged in laundry work.

Los Angeles and Pasadena did themselves proud in entertaining. Elegant and elaborate social functions were the order of the day. One afternoon was especially delightful, the entertainment consisting of horse racing, a polo game and chariot races. It was given in Tournament Park at Pasadena and was a veritable society affair. The chariot race, like those in the days of Rome, was most exciting. When Dr. Savage, dressed in the white and gold garb of the charioteer, slight of build, with sinews of iron, brought his six horses and chariot victoriously "home" in the third race, the entire audience rose and cheered and cheered again. The doctor's flashing eyes and genial smile acknowledged the ovation. Los Angeles will remain a "green spot" in the memories of Dr. Dowling and his associates.

A few hours were spent in Santa Barbara. It is quaint and restful; the mountains and the sea in such close proximity and the glorious coloring make it the American Naples.

San Francisco seemed a Mecca of Southern people, many of whom visited the car. Salt Lake, too, had its quota of Louisianians. The hospitality of its citizens and their interest in the health movement was marked. They seemed especially struck with the idea of the train, and said, "Utah must have one, too." This idea was popular in every state visited, and the papers have since reported that Colorado and Iowa have now plans under way for this kind of health campaign.

Cheyenne looks like a very new border town. It typifies in its streets, houses and

great open spaces one phase of the spirit of the West—self-satisfied aloofness. Dr. Barber, ex-Governor of Wyoming, was a delightful host during the few hours of the visit.

One of the distinguished visitors who was interested in the South and its development was Gov. Shafroth, of Colorado. He knew many Southern men of note and was delightfully reminiscent of his days in Washington.

Chicago dubbed the train the "microbe special." It took some little time to get adjusted to the breezy new title, but when a seemingly intelligent reporter asked how many million microbes we carried, we forgot to be vexed and laughed at both him and the title. We answered enough to kill even Chicago, but that they were not allowed outside the tubes and jars. Dr. George B. Young, Health Commissioner of Chicago, visited the train. He said: "We are doing practically the same thing here, but we have no cars." The Health Department of Chicago has done great things both in administration and education. The healthgrams of Dr. W. A. Evans, former Commissioner, have been quoted throughout the length and breadth of the United States. The force in this department numbers nearly eight hundred. One of the most interesting and beautiful of the Chicago buildings is that of the American Medical Association.

In Kankakee the Mayor told Dr. Dowling that the "Bug Car" was great. His health officer was so impressed by a visit that he was ordering a general cleaning of the city.

Dr. M. Goldman, of Memphis, and many other officials and citizens of that city were hospitable in their courtesies and interested in the train. Memphis is one of the foremost cities of the South, not only in advanced health work, but in general civic regeneration.

One of the interesting institutions visited was the hospital of the Southern Pacific Railroad in San Francisco. It is a marvel of sanitary perfection in equipment and in method. No less interesting was the private car of F. K. Ainsworth, chief surgeon of the road. It looks inside like an ordinary sleeper, but a "touch" transforms the elegant reception apartment into a complete operating room.

In Omaha a special engine took the educational and inspection car to all places of interest situated on the railroads around the city. The Union Pacific shops there are modern in every respect, and the environments, from the health viewpoint, are perfect.

In every city visited the newspaper men were alert to render service and to give space to the story of the how, why, who and what of the campaign.

No feature of the trip was more gratifying than the social courtesies extended, especially to the doctors. Cards of invitation to the clubs awaited their arrival and many offers of hospitality in private homes were received. Dr. Dowling was invited also in many places to make inspection tours of public places of business and of public utilities.

The tour of the health train was an event not only in the history of Louisiana, but in the health annals of the United States.

As a lesson in hygiene and sanitation it entered into the consciousness of thousands; as an exponent of the new idea of medicine, the Medicine of Prevention, it appealed to the intelligent of all classes; as an exploitation of the livable climatic conditions of the South it was an entire success; as a sign of the progressive spirit of the Louisiana State Board of Health it attracted attention nation-wide.

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DR. PINET, in "*Le Concours Medical*," May 14, '04.

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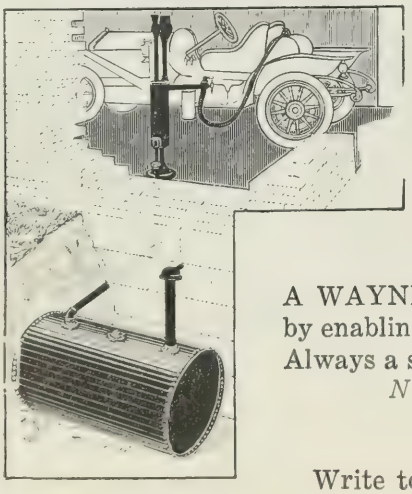

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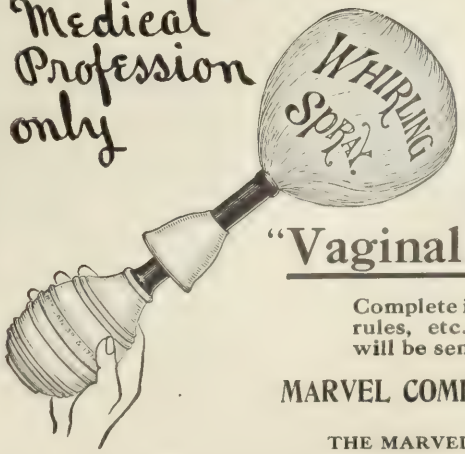

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SOME drug-agents are of doubtful therapeutic value and may well be discarded.

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But **Nuclein (Abbott)** is a necessity and the doctor who is not making use of it in his practice is handicapping himself seriously.

It increases the resistance-power of the body against invading bacteria. It multiplies the red corpuscles. It stimulates cell growth.

The disease-conditions in which **Nuclein (Abbott)** has proved to be exceedingly useful are these:

TUBERCULOSIS	MALARIA
ERYSIPELAS	SEPTICEMIA
TYPHOID FEVER	TONSILLITIS
SCARLET FEVER	PNEUMONIA
ANEMIA	RICKETS
CHLOROSIS	DEBILITY

Please do not judge **Nuclein (Abbott)** by the nucleins of early days and the nucleins of other laboratories, which are crude and of speculative value. Ours is the finished product of years and years of experimenting and it *does* give results.

Supplied both in liquid and tablet form at these prices: Nuclein Solution (recommended for general use, orally or hypodermically) per ounce 35c; per doz. 2Cc. ampules, 75c. Nuclein Tablets containing 2 minims of solution) per 1000, $1.25. Sent prepaid on receipt of cash with order.

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are recognized as standard because of their efficiency and convenience. They combine in one apparatus instrument, dressing and water sterilizers. They are made as Two-Piece, Three-Piece and Four-Piece Outfits. Each Outfit is made in a large size for Hospitals and in a smaller size for Physicians offices. Instruments are sterilized by boiling water, dressings by steam. The Outfits are adapted to any form of heating arrangement.

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Avoids use of Hypodermic Needle. No dangerous After Effects. No Disturbance to System from Injection of Drugs.

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3 Or that of any other person (not necessarily an assistant or agent)

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8 You have a voice in the selection of local counsel.

9 If we lose, we pay to amount specified, in addition to the unlimited defense.

10 The only contract containing all the above features and which is protection per se. *A sample upon request.*

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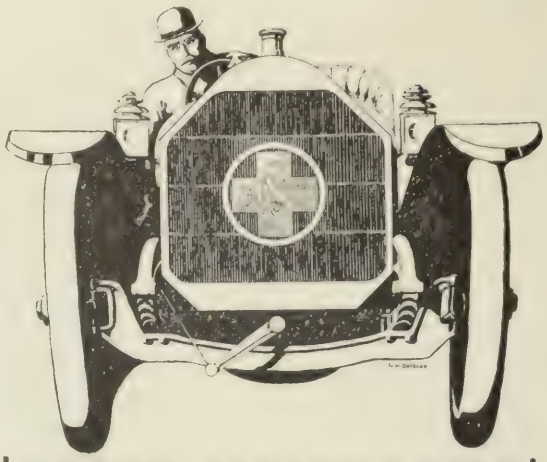
of **Fort Wayne, Indiana**
Professional Protection, Exclusively



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(As recommended by the A. M. A.)

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IT GIVES YOU THE RIGHT OF WAY

For the welfare of the public it should be on the radiator of your car.
It is being used by hundreds of the leading physicians. Why not you?
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Send me your object slides in mailing cases that will be sent on request, and lantern slides or photographs will be furnished in black and white or in natural colors as desired. Directions for marking the desired fields will accompany the mailing cases.

A card indexed file of photographs is the best reference library.

Let me explain to you the advantages of photo-microscopy.

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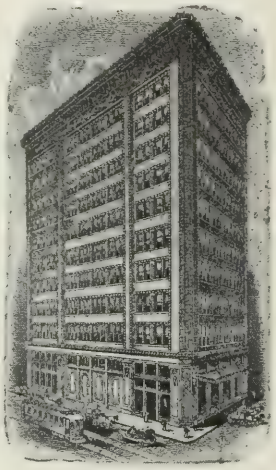

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The most scrupulous care in the manufacture of our

Pharmaceuticals

A bottle sealed from our laboratory is an assurance of quality within that would be hard to express in words, a trial only could adequately express.

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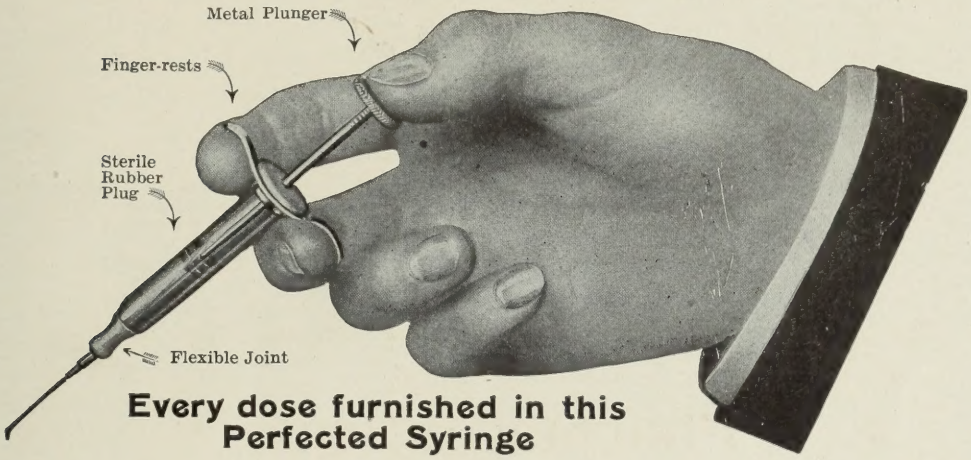
"The Best Only"

PHARMACEUTICAL LABORATORY

VAN ANTWERP BLDG. MOBILE, ALA.

Mulford's Antitoxin

and the New Syringe



Every dose furnished in this Perfected Syringe

Advantages of New Syringe: ASEPSIS, contamination impossible.

Positive Working: The metal plunger screws into the rubber plug, adjusting pressure and making action positive.

Metal finger-rest with rubber guard at top of syringe prevents any possibility of syringe breaking or injuring operator's hand.

Needle attached with flexible rubber joint permits motion of patient without danger of tearing the skin—a great advantage in administering to children.

Our new adjustable rubber packing possesses great advantages; it is readily sterilized, does not harden, shred, absorb serum or become pulpy.

Simplicity and accuracy—no parts to get out of order.

Mulford's Antitoxin is Accepted Everywhere as THE STANDARD

The higher potency enables us to use much smaller syringes.
Minimum bulk—maximum therapeutic results

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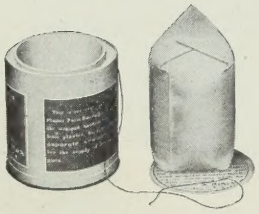
The B & B reputation has been twenty years in the building. It is the result of infinite care, of ceaseless experiment, of constantly seeking perfection.

Each formula and process is the final result of years spent in study, invention and sifting.

A thousand surgeons have helped us with ideas. And thousands of others have benefitted by our results. The brand B & B is never put on anything which is not right through and through.



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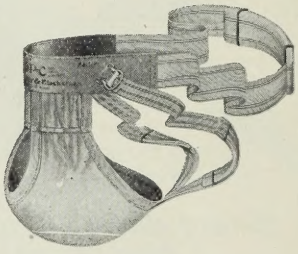
Noted for uniformity, strength and dependability—for remaining unaltered, always fit to use.

To secure these qualities we spent two years in testing every possible formula. Then we devised machines to avoid the variations of compounding by hand.

The result is a bandage which is always alike—always the best Plaster Paris Bandage.



O-P-C suspensories

For twenty years, more physicians have prescribed the O-P-C than any other suspensory.

The O-P-C is anatomically correct. It conforms to any size or condition. It affords an even and normal support. It leads to no constriction.

When the suspensory is once fitted, it needs no further adjustment.

The sack is seamless and self-adjusting. Made in lisle or silk.

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Have you seen any other liquid preparation of Ergot with a dated label?

We can do this because we sell and ship direct to you. Our products are not aged on the shelves of jobbing houses or retailers.

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2-Ounce Bottles .....$ .50 8-Ounce Bottles $1.80
4-Ounce Bottles .....$ .95 1-Pint Bottles $3.50

Each label dated. Price subject to change without notice, as cost of crude drug changes. Your orders are solicited.

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"Hay Fever: Adrenalin

I never think of the first without thinking of the second. There is nothing strange about that, though. The Adrenalin preparations 'fill the bill'; and you are not over-modest about telling us so."

A medical practitioner said this to us the other day. There is a sting in the last sentence. We are not greatly offended, however. In fact, we admit the justice of the impeachment. We *do* sound the praises of the Adrenalin products occasionally. These preparations, in our opinion, afford the most satisfactory palliatives in hay fever—*and we want the medical profession to know it.* That is why we are publishing this announcement. Our medical friend unconsciously provides us with a better advertisement than we could write if we tried all summer—and we cheerfully give him the top of the page.

SOLUTION ADRENALIN CHLORIDE

Adrenalin Chloride, 1 part; physiological salt solution (with 0.5% Chloretone), 1000 parts.

Dilute with four to five times its volume of physiological salt solution and spray into the nares and pharynx. (Ounce glass-stoppered bottles.)

ADRENALIN INHALANT

Adrenalin Chloride, 1 part; an aromatized neutral oil base (with 3% Chloretone), 1000 parts.

Dilute with three to four times its volume of olive oil and administer in the manner described above. (Ounce glass-stoppered bottles.)

ANESTHONE CREAM

Adrenalin Chloride, 1:20,000; Para-amido-ethyl-benzoate, 10%, in a bland oleaginous base.

A small quantity (about the size of a pea) is applied three or four times a day, the patient snuffing it well into the nostrils. (Collapsible tubes with elongated nozzles.)

[NOTE.—We also supply **Adrenalin Ointment, Adrenalin and Chloretone Ointment,** and **Anesthone Tape,** all successfully used in the treatment of hay fever.]

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